

Absolute Magnitude Science Fiction

Summer 2001



Issue #16

Chris
Bunch

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Steele

Sarah A.
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John C.
Wright

Bojanar
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Lawrence M.
Schoen

Terry
Franklin

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Science Fiction

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Fiction

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Rocket ship by Dominic Emile Harman.

Editorial Notes

by
Warren Lapine

$M = m + 5 + 5 \log p$

Over the last few years, I've had a number of people ask me why I occasionally buy stories with downbeat endings. A number of those asking have been quite angry with me because of the unhappy endings in some of the stories published in *Absolute Magnitude*. As a culture, we've come to expect that everything must end happily. It's deeply ingrained in our national psyche, from the classic fairy tails that we rewrite for our children to the foreign films that we remake with happy endings for our adults.

I can remember watching many a movie or television program with the realization that everything had to turn out for the best in the next ten minutes. This took a lot of the suspense out of the experience for me. Tension is a hard thing to pull off when the audience knows that without a doubt the hero/protagonist must solve the mystery or problem and then must live through the experience.

I don't buy a lot of stories with downbeat endings. *Absolute Magnitude* would probably go under if I did, as Americans do demand happy endings. I usually buy no more than two or three stories per year without the prerequisite happy ending. But I do plan to continue doing this. Why? you might ask. The answer is simple. If the reader knows that not all stories in *Absolute Magnitude* have happy endings then the tension is real. Will the hero survive? You honestly don't know. As far as tension is concerned, isn't it better to wonder *if* the heroes will survive rather than *how* they will survive? In the pages of *Absolute Magnitude* you know that the dangers that face the protagonists are real, that the protagonist might fail. So when the protagonist does succeed against all odds, the release of tension is real.

The universe is not a safe place. Good people can, and do, fail. As long as this remains true, the pages of *Absolute Magnitude* will not be safe. If you want safe, there are other magazines out there that wouldn't dare expose you to any real dangers. They'll never let you experience disappointment. But remember, without knowing the taste of disappointment you can never truly savor the taste of success. If you want to be safe you're in the wrong place. If you want real adventures, real risks, and as a byproduct real passions, then you've come to the right place; but don't forget to buckle up, the ride can get bumpy.

Absolute Magnitude

Science Fiction

PUBLISHER/EDITOR IN CHIEF/ART DIRECTOR
Warren Lapine

ASSISTANT PUBLISHER
Angela Kessler

PUBLISHING ASSISTANT
John Perrault

CONTRIBUTING EDITORS
Allen Steele
Ian Randal Strock

ASSOCIATE EDITORS
Mike Allen
Mike Jones
Catherine A. Reniere

ADAPTIVE TECHNOLOGIES
Joe Lazzaro

LAYOUT & DESIGN
Warren Lapine/Angela Kessler

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Buffalo Dogs

by Lawrence M. Schoen

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Getting arrested a few days before I was to head back to Earth was the last thing I had in mind. I'd been working the Lil Doggie, the only spaceport lounge on Gibrahil, for the past three and a half weeks. My contract called for two shows a night, with an additional matinee on Saturday. I had Sundays off. A day on Gibrahil runs near enough to twenty-four hours as not to quibble, but the weeks last for eight of them instead of seven. My agent back on Earth hadn't bothered to look into the extra day issue before booking me into a contract that paid by the week. It meant that the two shows I was required to do on Gibsday were freebies; all the work for none of the pay.

The marquee out front read "THE AMAZING CONROY, MASTER HYPNOTIST" and cycled through a google of colorful hues in a blatant attempt to remain eye-catching. It worked. My smallest audiences were decent, and the large ones packed the place. Venues like Gibrahil are always hungry for any kind of entertainment, and a stage hypnotist can make a good buck.

The humans in my audience were all on Gibrahil for the same thing. Every one of them was in some way involved in the buffalo dog trade. The buffalitos were the only resource on Gibrahil, the single commodity responsible—directly or indirectly—for bringing people here. It was a colony world, and it wasn't our colony. Gibrahil belonged to the Arconi, and the human presence was limited to a single square kilometer base. The Arconi laid down the rules, and as long as they had something Earth wanted we abided by them like good little humans. Which is why I got arrested.

Earlier in the day the Arconi had arrested a buffalo dog courier for attempted smuggling. The Terran consulate insisted it must have been a paperwork snafu, but the Arconi possess a limited psychic faculty concerning truthfulness and discovered otherwise. Arcon justice is as swift as it is certain. The man had been tried, convicted, and executed before the end of my dinner show.

Everyone needed a distraction, and for better or worse I was it. I began with a few jokes to break the tension and put people at ease. Seeing a hypnotist, even as entertainment, tends to make some folks nervous, as if with just the lift of an eyebrow I could make men reveal their darkest secrets or women throw themselves into my arms. Don't I wish. They say Anton Mesmer could do that sort of thing centuries ago. More likely he just had a better agent than I do. Me, I need a compelling induction and a good five minutes of relative quiet, not to mention a waiting car if the thing doesn't work. Hypnotic blackmail and seduction may make for good vids, but in real life sticking to the script is a lot safer. That's not to say I never dabble or dally, just never during a show. Later on, that's a different matter. I always install a post-hypnotic backdoor

when I'm performing; you never know when it might come in handy. Even after a week's time I can whisper the magic key phrase and presto, you're back in a trance and wonderfully open to suggestion. What can I say, I love my work.

That night there were several tables of Arconi present, as there had been at all of my performances. Fifty shows, and none had ever laughed, never so much as cracked a smile. And they could smile, I was fairly certain of it. The Arconi look like tall, stretched humans, like something in a fun house mirror. Their skin tone runs through a range of whitish shades, from eggshell to ecru, and their body hair is generally the blue-black of comic book heroes. They have mouths and lips and teeth, and as far as I knew they used them for all the same things we did, but I'd never seen them smile. It wasn't that they didn't enjoy the show, they just couldn't understand it. It was that truth sense of theirs. Arconi always know whether or not they're being told the truth. Among themselves they never lie; they simply can't. It's a small thing, but when you start to work out the incidentals you discover just how ubiquitous deception is in human history.

Arcon society has almost no crime. Sure, they have crimes of passion, same as us, but anything premeditated gets nipped in the bud when the local magistrate asks you if you did it. For the Arconi, the concept of lying didn't come up until they started dealing with humans. They find us fascinating, utterly bizarre. It's like knowing how gills work, a nice safe objective knowledge that you know doesn't apply to you but that opens up interesting theoretical possibilities just the same.

Quite a few Arconi had put great value on seeing a hypnotist make people believe things that were obviously false. They'd flocked to the human district to catch my shows every night since I'd arrived. The first two nights I brought a few up to the stage. They went under just like humans. I had no trouble getting them to cluck like chickens, but they couldn't accept any suggestions that violated their objective reality. They couldn't believe they'd actually become chickens. No imagination, totally grounded. Bottom line, they made for a dull show, and I stopped taking them as volunteers.

Anyway, I was doing my usual show for the last week of a gig. Ten minutes into the performance I had two young secretaries, an elderly bank loan officer, and a middle-aged security guard on stage with me, all of them deeply entranced. I'd told the secretaries they were Arconi diplomats and had them explain the Arcon plan for human enlightenment. There's no such thing of course, but neither secretary/diplomat knew that, and they elaborated and expounded on all sorts of made-up nonsense with great sincerity while the human portion of the audience hooted and laughed.

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The secretaries finished their presentation and received thunderous applause from the humans in the audience. I thanked them and escorted them back to chairs on the stage which I'd already assured them comprised the lush Arcon embassy back on Earth. I returned them to a deep trance. They'd done a great job, surprisingly original and clever, and the audience was breathless to see what would happen next. I turned to the security guard and, after a wink and grin at the audience, began her instructions.

"Butterscotch Melpomene," I whispered to her, using the key phrase I'd implanted at the start of the show. Her posture changed, not so much a movement as an attitude. Though completely relaxed she was now almost painfully alert. I turned back to the audience and waved them in, as if inviting them along for the gag.

"You're a native of Gibrahli," I said in my stage voice, all mellow tones and booming resonance. "You're intelligent and articulate, educated and urbane." The security guard sat up straighter in her chair, her face composed and confident, her eyes still closed. "I'd like you to tell us about Gibrahli from your own unique perspective, if you don't mind. Would that be all right?"

She nodded, licked her lips, and raised one hand in the start of a gesture.

"That's fine. You'll begin to do so when I count to three," I said. "Oh, and one more thing. You're not human, you're a buffalo dog. One . . . Two . . ."

"STOP!" An Arcon at one of the rear tables was on his feet. I recognized him. He was a real regular; he'd come to at least one of my shows each day since I'd arrived, always sitting at the same table, always watching with rapt attention. He'd even been a volunteer, a pretty good subject for an Arcon. His name was Loyoka, and he stood pointing a weapon at me. Most of the audience laughed, assuming it was part of the act. I knew better.

"Everyone on the stage is under arrest," he continued. "Do not move. Cooperate and you will not be injured."

Loyoka made his way to the stage, those long longlegs allowing him to mount the platform without effort. I'd frozen as soon as I saw the gleam from his laser sight. He approached the security guard, squatted until they were on the same level and asked, "Are you a buffalo dog?"

There was a ripple of laughter from the audience; most still thought the Arcon was part of the act. The woman didn't answer him. She couldn't answer. The only voice she could hear at the moment was mine. Loyoka figured this out pretty quickly and turned to me. "Why won't she speak? You indicated she was articulate."

"I haven't finished counting," I said. "She won't follow the instructions until I do."

"Three!" said the Arcon, his eyes fixed on the security guard. Nothing happened. More snickers from the audience. "You say it," he said to me, without turning his head.

"Three," I breathed, and the guard opened her eyes, smiled brightly, and nodded into the Arcon's face scant inches from her own.

"Are you a buffalo dog?" repeated Loyoka.

"Oh my, yes," agreed the guard. "I was born here on Gibrahli, and let me tell you, it's not an easy life. It's a wonder I'm still here at all. I've seen all of my littermates and all of my childhood friends shipped off to other planets by you Arconi. Shameless, I tell you, just shameless."

She rambled on and on, confabulating a complete history as an alien creature with a brain no bigger than a walnut. The Arcon's jaw dropped lower and lower as he listened, his psychic faculty assuring him that the human believed every word of it, that despite appearances she was a buffalo dog.

Ten minutes later I was in Arconi custody and sitting in a detention cell. My four volunteers were no longer entranced and as far as I knew were being similarly detained by the authorities. My out-system visa had been confiscated. The Lil Doggie was closed, pending the outcome of the investigation. The management lodged a complaint with my agent, and filed a lawsuit against the interstellar stage performers' union. There's no business like show business, especially when it comes to blackballing. Even assuming I got out of the current predicament it was highly unlikely I would be able to get work anywhere off Earth again. For the moment though, that was the least of my problems.

Hours passed. I spent the first few going over the show in my mind, again and again, trying to figure out what had pissed off the Arconi. I couldn't think of anything. I dozed, off and on, and jerked fully awake when the door to my cell finally opened and Loyoka entered with two other Arconi, each dragging a short stool. They perched on the stools, feet flat on the floor, their long legs bent, knees at shoulder level. It left them at eye level with me as I sat on my bunk. They stared intently, all of them.

"Tell us . . . a lie," said the one on my right.

"A lie?" I asked. My gaze moved from one stern face to the next. Their eyes looked just like human eyes, but it wasn't comforting.

"Yes, Mr. Conroy, tell us something you do not believe is true. Do it now," he said.

My mind went blank. The only thing I could think of was the aborted show.

"I'm an Arconi diplomat," I said. "I have a plan for human enlightenment."

The two newcomers frowned at that. Loyoka recognized the line from tonight's show and the corners of his mouth turned up ever so slightly. They could smile.

"You are lying," said the one on the left, his frown deepening.

"You told me to lie," I shrugged.

"Yes, and we know you are lying. In your performance, you tell other humans to do things. These things are not lies."

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I shook my head. "I'm sorry, I'm not trying to be difficult, but I really don't understand what you're getting at."

"Are you a smuggler, Mr. Conroy?" asked Loyoka.

"Am I what?"

"Are you a smuggler of buffalo dogs? Please answer yes or no."

"No!" I said, feeling a growing dread.

"But you turned that woman..." Loyoka glanced at a small palmpadd, "Carla Espinoza, into a buffalo dog. It was truth. I saw it in her mind."

"But, she wasn't really a buffalo dog!" I grinned. This was all some sort of joke, right? I stopped. They looked deadly serious.

"She was. I saw the truth myself. She was a buffalo dog. An unlicensed buffalo dog, Mr. Conroy." He frowned then, making a complete set of them. "Do you understand the severity of this crime? There are allegations that you are attempting to export a stolen and fertile buffalo dog to Earth."

My mind reeled. The buffalo dogs were one of the few life-forms native to Gibrahil, and unlike anything else in known space. They looked amazingly like American bison rendered at one fiftieth scale. They were adorable creatures with cute woolly heads and tiny blue tongues that stuck out when they bleated. They could eat anything, anything at all, and thrive. And most amazing of all, they farted enormous volumes of pure diatomic oxygen, which made them incredibly useful to terraformers. Not to mention the significant dent they were making in problems of landfill and toxic waste sites back home on Earth. On any given night at the Lil Doggie fully one quarter of the people in the audience were couriers, slated to return to Earth on the next ship out, a thin portfolio of transfer licenses under one arm and a buffalo dog tucked under the other. The Arconi controlled the only source of the beasts, and exported them, if fertile, at ten million credits a head. At that price smuggling the little guys had become quite attractive, and several sterile pups had been stolen. Not surprisingly, The Arconi government had responded with extreme prejudice. Even suspicion of involvement with black

market buffalo dogs could bring a death sentence. I was in deep buffalo chips.

"But she wasn't a buffalo dog," I protested, half rising from the bunk. "She wasn't, not physically."

Loyoka brought a hand down on my shoulder, pushing me back. "I know what I saw in her mind. She was a buffalo dog. On Gibrahil, if a human is in possession of a buffalo dog he is either a smuggler or a courier. I can see the truth in your mind, Mr. Conroy. You are not a smuggler."

He paused and looked to either side at his companions. A silent confirmation passed among them and all three rose to their feet.

"We are very troubled by all of this, Mr. Conroy. We take even the suspicion of crime very seriously. While you've been waiting we've done a full search of all registered facilities. None report any missing stock; you're not being charged with theft. The only reason that you have not been prosecuted and convicted on the remaining charge is that Carla Espinoza is infertile."

It was just getting weirder and weirder. "How would you know that?" I asked.

Loyoka barely glanced at me. "We did a complete examination of her. Any human in possession of a fertile buffalo dog is instantly guilty of a capital offense. But, as I said, she's incapable of conception. Infertile buffalo dogs may be transported by licensed couriers. That just leaves the matter of clearing up the paperwork. We have gone ahead and tagged Carla Espinoza and drawn up the appropriate paperwork for your license."

One of the other Arconi presented me with a palmpadd and stylus. I glanced at the document and signed. They'd transferred the bulk of my earnings on Gibrahil out of my account and placed a lien on future income for twice that amount to cover the balance due for my license. I was now an authorized courier.

"Congratulations, Mr. Conroy. You've acquired a buffalo dog without paying the usual ten million credits." There wasn't a hint of sarcasm in his tone. He really meant it.

"But she's not a buffalo dog now, right?" I said. "She's out of the trance, she knows who she is."

All three Arconi frowned again and fidgeted nervously. The other two left, taking the stools with them, leaving Loyoka to bestow a few parting words. "We admit there is much about your abilities which we do not understand," he said. "While



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it is clear to me that your subject tonight knew she was a buffalo dog, it is equally obvious that in some ways she was not. This is new territory for us, Mr. Conroy. We'll be watching you closely for the remainder of your stay. I'd advise you to be quite careful.

"You're free to go now," he said, holding the door open for me. "Speak to the clerk at the front desk. He'll return your visa and provide you with a hard copy of your licenses. You can pick up Carla Espinoza there as well." He pointed me to the right and sent me on my way. He headed off to the left and vanished around a turn in the corridor.

Carla Espinoza sat on one of a bank of interlinked chairs in the lobby. She was a bit pale but otherwise appeared unharmed. Dangling from her left ear was a two centimeter disk of bright red plastic. She'd been tagged for transport. There was an angry look on her face, diffused at first but quickly focusing when she saw me approach. I started making apologies as soon as I was close enough to be heard.

"Ms. Espinoza, Carla, please, I'm terribly sorry. I had no idea any of this was going to happen, you must believe me."

She rose to her feet and glared. She was a head shorter than me, and twenty years older. I had no doubt she'd spent most of that time bouncing from one security position to the next. She outweighed me by a good ten kilos, all of it muscle. The look in her eyes made it clear that she could beat the crap out of me without breaking a sweat.

Her hands lifted, tugging at her ear lobe and the plastic tag. It unclipped and she threw it at me. "If this was Earth I'd sue you and your next three generations for everything you had," she said. "You're lucky the Arconi don't permit lawyers here."

I caught the tag and put it in my pocket. It was an expensive souvenir. I handed her my credit chip. "There isn't much left in there, but you're welcome to it. They took most of what I had to cover license costs."

"License costs?" she said.

I gave a weak smile. "They determined that since I was in possession of a buffalo dog, and I wasn't a smuggler, I obviously had to be a courier, and charged me accordingly."

Her anger melted away at this and she laughed. She'd been on Gibrahil long enough to know just how expensive a courier license was. That seemed to satisfy her. She pocketed my credit chip. "I'm going to let this go," she said, "provided I don't see you again. Otherwise I'm going to tear you a new hole. You'll be hurting so bad that a walk in vacuum would feel like a welcome relief. Are we clear?"

I nodded, trying hard not to flinch. She gave me another look up and down and stormed out. The clerk seated behind a desk at the back of the lobby had watched the entire scene without comment. He looked pale, even for an Arcon. And why not? He'd heard her every word, and knew it was all true. I collected my hard copy and left.

Judging by the position of Gibrahil's wan star high overhead it was nearly noon. I had nothing to do, no money to spend, and a full day before my ship back to Earth left. I started making my

way back toward the spaceport proper, hoping to bum a meal and some crash space in exchange for a few hypnotic parlor tricks, when a man in a painfully new suit locked step with me. My first thought was that the manager of the Lil Doggie wanted a piece of me, but the fellow was too small to be a goon, too preppy. He was a polished, clean-cut, silver spoon archetype who doubtless had an MBA from some prestigious Ivy League university's online degree program. I'm not a tough guy, but compared to me he was a weenie.

It took a moment, but I recognized him from a show. I'd hypnotized him. He was a corporate type, a middleman in the transfer of buffalo dogs to Terran business concerns. He had been at the Lil Doggie during my opening show, part of a larger party of still more corporate suits and prospective clients. I'd hypnotized half the people at the table. The clients had been marvelously entertained and this fellow had arranged a generous tip to show his appreciation. Even a small percentage from Gibrahil's buffalo dog traffic translated into vast amounts of cash. He could afford to tip big and to wear new suits.

"Mr. Conroy," said the tipper, "I apologize for contacting you so crudely, but I very much need to speak with you. I have a proposition."

Just when you think things can't get worse, corporate hustlers show up. Great. "I'm sorry, but I'm tired and I'm hungry and I'm really not in the mood for whatever it is you're selling," I said.

He persisted. "Mr. Conroy, my name is Jensen. Please, just hear me out. Why don't we get a nice comfortable table at The Prairie. My treat, of course. You can have a nice meal, relax, and after you've listened to my proposal if you're still not interested, well, that will be it."

That stopped me. The Prairie was the only five star restaurant on Gibrahil. That put it two stars above everything else in the kilometer city. The cost of the appetizers alone would have wiped out a week's salary. I slipped an arm around his shoulder and mustered up a tired smile. "Mr. Jensen, if lunch is on you, I'm all ears."

He look relieved and escorted me to The Prairie. The maître d' fitted me with an appropriate jacket, and in short order I was sitting at an elegant table enjoying an *amuse-gueule* of potato cornets layered in crème fraîche, salmon, and caviar and sipping the most delicate wine I'd ever imagined. My cares evaporated but I kept a wary eye on my host. The other shoe was about to drop.

True to his word, he had let me get comfortable before he started his pitch. I was well into the first course—black-eyed peas arranged with antelope sweetbreads, mushrooms, and wild raspberries—when he reached into his breast pocket and withdrew a palm padd.

"Mr. Conroy, allow me to be direct. My superiors at the Wada Consortium are aware of your recent change of fortune, and the juxtaposition of circumstances that put you there, all

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through no fault of your own. We'd like to help, if you'll let us. We want to hire you."

I almost choked on my wine when he said that. I set down my glass and wiped at my mouth with my napkin. "You need a hypnotist, Mr. Jensen?" I said.

"No, Mr. Conroy, we need a courier. The corporation we represent is scheduled to transfer thirty-two buffalo dogs off Gibrahl on tomorrow's ship. All of them have already been sold, and we've guaranteed their delivery. The Arcon government allows only a single buffalo dog per licensed courier, and at present we have only thirty-one couriers available."

I gave him a puzzled frown, "then why did you schedule thirty-two buffalitos?" I slipped another forkful of sweetbreads into my mouth.

Jensen sighed. "Because until yesterday afternoon we had thirty-two couriers, Mr. Conroy."

Which was about the time I remembered the execution of a smuggler. I put my fork down. My appetite vanished. That thirty-second pup was worth ten million credits to someone back on Earth, and the penalty for nondelivery was going to cost Jensen's company at least half that much.

"I'm a hypnotist. I don't know much about buffalo dogs or being a courier," I said.

"There's not much to know, Mr. Conroy. The buffalo dogs themselves require minimal care. All a courier does is carry the creature onto the ship and stay with it in his stateroom. For the duration of the voyage to Earth you simply monitor the room's atmospheric regulators to prevent excess oxygen buildup. Upon arrival you carry it off. I'm sure that's well within your talents."

"Why don't you just run someone else through the licensing procedure?" I asked.

"It takes five years to apply for a license, Mr. Conroy. Quite frankly, we're amazed you've acquired one, but we won't question it. For whatever reason, the Arconi suddenly consider you a courier, and they're the only ones we have to please to get that thirty-second buffalo dog to Earth."

He slid the palmpadd across the table. A contract glowed up at me. "I'm prepared to offer you compensation in the amount of one hundred thousand credits in exchange for you acting as our courier."

That was a lot of money, especially since I was broke and soon to be blacklisted. Still . . .

"Is that the standard rate for a courier?" He nodded. I paused, pretended to read over the contract while I wracked my brain, trying to remember that very first show I'd done on Gibrahl. I looked at the sweetbreads on my plate and it came to me. Spicy Egyptian. I leaned forward and whispered, "Jalapeño Osiris."

Jensen slumped back in his chair, his eyes closed. I reached a hand into his jacket and found his wallet. I flipped through

it, and checked his corporate ID to learn his first name, as well as the balances on his corporate and personal credit chips. Ken had a lot of credit at his disposal.

"Can you hear me, Ken?"

"Yes, I hear you."

"That's good. We're very good friends, you know. We tell each other everything. There are no secrets between us, Ken. No secrets at all. Do you understand?"

"Yes," he murmured.

"Tell me, what's the standard fee for a courier? One who's carrying a buffalo dog from Gibrahl to Earth for your company?"

"Five hundred thousand credits," he said. No hesitation at all.

"And yet you offered me only a fifth of that, Ken. Is that any way to treat a friend? Why'd you do it?"

Jensen shrugged, looking embarrassed despite his closed eyes. "We figured you wouldn't know any better and were so far down that you'd jump at a hundred."

"You're probably right, Ken. It hasn't been my day. But things are looking up. When I count to three you're going to have a change of heart, Ken. You're going to decide that you really don't want to screw me like that. You realize that I'm saving your ass, and you're going to rewrite this contract for the full five hundred thousand. Plus you're going to throw in your corporate credit chip, just so

I have some walking around money until it's time for me to leave. Do you understand?"

"Yes, I understand."

I returned his wallet to its proper place, sat back, and counted to three. Ken

Jensen blinked rapidly and sat up straight, acting like a man who had briefly dozed off and looks around to see if anyone noticed. I was staring down at the palmpadd, pretending to study the contract and shaking my head. "I just don't know . . ."

"Let me have that back," he said. "I think I can sweeten the deal. You're really getting us out of a bind, so why don't we call it five hundred thousand, instead?" He made the changes to the contract and slid it back to me. His company credit chip was sitting on top of the palmpadd.

"Mr. Jensen, you've got yourself a courier." The look from across the table was one of relief and satisfaction. I tried hard to keep my face from showing the same emotions.

Jensen left me to enjoy the rest of my meal, but not before he outlined the plan. I was to present my courier license at any of the Arconi registered facilities, where I'd be free to select the doggie of my choice. Before boarding my ship home I would again show my license and be questioned by an Arcon customs officer. Then, presto, five hundred thousand credits upon arrival on Earth.

I confess, I lingered over the remaining courses. I'm enough of a gourmand to know that proper appreciation requires a respectful span. Jensen had already paid for the meal, and I



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used his corporate chip to add to the tip before leaving. My new profession beckoned. I was off to begin life as a courier.

It didn't matter to me where I got the buffalo dog, though most couriers have all sorts of superstitions about such things. My ship departed at 1:00 a.m., leaving me nearly ten hours to kill. I took my time, decided to enjoy a good walk after a great meal. Pedestrian traffic was light. I passed several other couriers, identifiable by the doggies tucked comfortably under one arm. Eventually I found my way to the facility farthest from the spaceport's customs gate. I stopped in front of a kiosk and a short, bored looking Arcon regarded me from within.

"You're a courier?" he asked, barely glancing at me.

"You bet," I answered, and he waved me through, the truth of my statement as obvious as daylight.

There was a brief flight of stairs down to the holding area and sheer chaos waiting at the bottom. Thousands of bleating, yipping, scampering buffalo dogs filled a shallow area the size of an Olympic pool. Holographic signs projected warnings of extreme combustibility and the sounds of exhaust fans provided a constant background of white noise. The buffalitos cowered, none of them able to climb up the two foot height of their pool, though they could see the area surrounding it. They eagerly approached anyone, human or Arcon, who drew near the perimeter. The humans, a dozen or so, were couriers. I watched as they reached in to lift up one creature after another. The selection process appeared to involve hefting the buffalo dog under consideration, tucking it under first one arm and then the other, peering into its eyes, and checking the shade of its blue tongue. Superstitious ritual, but conscientiously observed nonetheless. Eventually, each courier selected a doggie and carried it over to an available Arcon for processing.

After witnessing several variations on the process I followed the example. A very enthusiastic doggie spied me as I approached the edge of its enclosure and plowed through the nearer pups, desperate to reach me. I picked it up. Cute. Adorable really, but for five hundred thousand credits it could have been ugly as sin and I'd have done the job.

"C'mon, little darling," I said to it, barely resisting the urge to use baby talk, "you'll do as well as any other." It farted some oxygen, bleated at me from out the other end, and stuck out its tiny tongue. Cerulean. Fine with me. I looked around for one of the Arconi that wasn't busy, found one, and walked up to her.

"You are a courier?" she asked, her tone only slightly less bored than the fellow at the door.

"I'm a courier," I said, "The Amazing Conroy, Master Courier, at your service." She didn't look the least bit amused.

"And this is the buffalo dog you've selected?"

"Absolutely," I said. "Do I get to name her?"

She shrugged, "That is the custom sir. I'll prepare her tags once I verify the animal's health and administer a sterilizing agent." She took the doggie from my hands and pressed a medical scanner deeply into fur.

"Then I'm going to name her Regina. Regina Catherine Aloysius Nantucket Bitter Almonds St. Croix. What do you think, is it too much?" What can I say, I was on my way to being a half-millionaire, well fed, and in a great mood.

The Arcon frowned. "I would recommend a more masculine name, sir. You've selected a male. He is in excellent health, but if you'd prefer a female instead you are free to put him back and bring up another for verification and sterilization."

I shrugged, "What's in a name? No, this one is fine, I'll just call him Reggie. Go ahead, you can sterilize and tag him."

She shook her head. "I'll be happy to tag him for you, sir, but only the female buffalo dogs are sterilized." She handed the doggie back to me. "If you'll come this way, I'll prepare Reggie's tags."

Five minutes later I exited with Reggie tucked complacently under my left arm, the blue plastic disk of his new tag hanging prettily from his left ear. The entire process had taken barely a quarter of an hour. It was along

walk back to the port, and more

than once I had the feeling that someone was following me. I made my way to customs and immediately recognized the officer on duty. He was the fattest Arcon I had ever seen, and for that reason alone I'd had him up on stage as a subject during my first week. He'd gone under easily and loved the



Buffalo Dogs

experience. After the show he came back stage and shook my hand, something the Arconi simply never did. He did it again now when it was my turn at the customs gate, and added only the second smile I'd ever seen from an Arcon. I was in the presence of a fan.

"Mr. Conroy, I was so sorry to hear about your recent problems with the authorities," he said. In the little kilometer square city rumor traveled at the speed of light, and buffalo dog gossip maybe even a bit faster. "But you've bounced back nicely, I see. I'm delighted to have the privilege of clearing you. This is your first trip as a courier, isn't it?"

I searched my memory again, using the same mnemonic tricks that let me remember thousands of individual key phrases and their respective hypnotic subjects. "Thank you, and my last, I suspect. I'm a hypnotist, really. Sergilo, wasn't it?"

He beamed, standing a bit taller and straighter as if I'd just made him godfather to the Prince of Gibrahil. "That's right, Mr. Conroy. I'm flattered you remember. Well, let's get you processed and cleared without delay. I just have a couple quick questions and you'll be free to board your ship. Ready? Are you a licensed courier? Did you obtain this buffalo dog in the prescribed and lawful manner? And is this the only buffalo dog you'll be transporting? Just answer yes or no, please."

I replied yes three times. The Arcon kept eye contact with me and nodded at each answer, confirming the truth in my mind. I grinned and asked, "Aren't you going to ask me if the critter's sterile?"

He shook his head. "There's no need, Mr. Conroy. You've got a male there."

"How can you tell under all this fur?"

"Blue tag. Blue for males, red for females."

"Handy system," I said.

He glanced at my visa and consulted a schedule. "Your ship doesn't leave until one this morning, so you've got plenty of time to settle in. I'm on duty here till midnight if you need anything. And if I don't see you again, well, you have yourself an enjoyable trip home, Mr. Conroy."

A few minutes later I was in my cabin on the good ship *Bucephalous*. The economy-class cabin I had shared with three other travelers on the trip in had been upgraded to the more spacious and private accommodations typically used by couriers, courtesy of Mr. Jensen and the Wada Consortium. It included a separate pen and restraining couch for Reggie as well as special atmospheric controls to ensure that his flatulence didn't cause any problems.

My luggage had been impounded when the authorities closed the Lil Doggie, and apparently released when I was. Jensen had arranged for its transfer and everything was right where it should have been in the cabin. Reggie settled into his pen, bleating happily, and I laid back on my own couch to go over recent events. I was about to be wealthier than I had any right to be, though I was still probably blacklisted from ever performing again. That irked me. I'd just told an Arcon that I

wasn't going to remain a courier, I was a hypnotist. Still, at five hundred thousand per doggie it was tempting. *But*, I asked myself, *was it any kind of life for a hypnotist?* I held up two images in my mind, courier and hypnotist, comparing and contrasting. An idea bloomed. It was risky, a gamble, but it combined the best of both worlds, if I didn't end up executed.

I got up from my couch and checked on Reggie. He had curled up on a blanket in his pen and fallen asleep. I slipped into the cabin's tiny bathroom, regarded myself in the mirror. I created a new trigger phrase and started to implement my idea.

A half hour before midnight I left the *Bucephalous* and quickly made my way to the nearest registered facility. Barely a block from the spaceport, this one was even larger than the last I'd visited. It was like a vast buffalo dog warehouse with humans and Arconi scurrying about. I tried not to look nervous, and figured as long as I didn't lie I'd be fine. I presented my papers at the door, confirmed that I was a courier, and was in. Time was short and I wasn't very choosy. There were dozens of smaller pens, with the doggies in each assigned by particular combinations of height, weight, tongue color, and so on. I looked for one that was more or less

the same size as Reggie, scooped it up and headed for the an available Arcon on the far side of the pens.

"You are a courier?" he asked, and I nodded an assent. "This is the buffalo dog you've selected?" Again I nodded. "Fine, let me have it." He wielded his medical scanner with professional boredom, studied the readout and turned back to me. "You've made a fine choice. She's in perfect health. Give me a moment to administer a sterilizing agent and you can take her."

"A female?" I said, trying my best to look disappointed. "I'm sorry, I wanted a male. It's a

Friday, you know, unlucky day for females. I'll just carry this one back."

The Arcon dismissed me with a shrug, likely having heard far stranger courier superstitions. He didn't spare me a second look as I carried the doggie back toward the pens; there was plenty of other work for him. I made my way past the pens of doggies but didn't stop to replace the female. Instead I walked toward the exit, trying hard to keep my pace natural and unhurried. No one stopped me and I was back out onto the street without incident. I was now a smuggler.

The trip back to the port was the longest block I'd ever walked. That feeling of being followed returned, and as I rounded the corner I caught a glimpse of two Arconi in my peripheral vision. The trigger phrase leapt to my mind, but it was too early to use it. It was useless until after midnight. Instead I took the red tag out of my pocket and affixed it to the buffalo dog's left ear. According to the tag she was now Carla Espinoza. I entered the spaceport and detoured into a small pub with an elaborate exhaust system and took a seat at the bar. Most of the clientele were couriers, each with a buffalo tucked under one arm. It was common for couriers to enjoy a



Absolute Magnitude

drink before boarding the ship home to Earth. Say one thing for the Arcon psychic faculty, it made clearing customs efficient and quick. We'd all be able to get through in under ten minutes. Well, maybe not all of us. It was still a bit before midnight and Sergilo, my fat and friendly Arcon, was still on duty and sure to recognize me. I ordered an overpriced beer, put it on the Wada Consortium chip and settled in for a half hour's wait just to be safe. I was on my second beer when four Arconi entered the pub. One of them was Loyoka.

"Put down the buffalo dog and step away from the bar!"

There were other couriers in the room and none of them seemed the least bit alarmed. Those at the bar were all setting their doggies down and keeping their hands in plain view as they moved away. I did the same, sliding a bowl of peanuts under Carla Espinoza's woolly beard to keep her happy. This was it. "Spumoni Heimdalh," I whispered to myself. I blinked and almost stumbled. Something had happened, but I wasn't sure what.

Ignoring the other couriers, Loyoka came for me. "I told you I'd be keeping an eye on you, Mr. Conroy. Is that your buffalo dog?"

"Yes," I said. His gaze never left mine. "Though technically I suppose it belongs to the Wada Consortium. I'm just the courier."

"The same Wada Consortium that recently employed a courier found to be a smuggler? Don't you find that a bit of a coincidence, Mr. Conroy?"

"Not really," I said. "That courier was executed. They needed another one fast and I was available. I don't see anything coincidental about that at all."

He pushed past me to the bar and picked up the buffalo dog, studying the tag on her ear. She gave a bewildered bleat as he pulled her from her bowl of peanuts.

"And this is Carla Espinoza?" His eyes narrowed.

"Yes, she is," I said, giving him a quizzical look.

"This is the woman you had on stage during your performance last night?"

I laughed. "No, this is a buffalo dog I selected from one of your registered facilities. I just named her after that woman."

He grunted then, and thrust the buffalo dog into my arms. "Then let's get you safely through customs, Mr. Conroy. I wouldn't want you to miss your ship." He nodded to the other Arconi who lined up to either side and behind me and together we all marched over to clear customs.

It was after midnight and the customs officer was a short and attractive Arcon, almost human looking. The name Sergilo came to me as I waited in line, but I couldn't place why. I was fairly certain I'd never met her; not all the Arconi had come to my shows. When it was my turn I presented my courier license.

She glanced at it, at me, and then at Loyoka and his friends. Loyoka moved to stand next to her, the better to see me. "Mr. Conroy," she said, reading my name from the license, "I have just three questions for you. Please respond yes or no. Are you

a licensed courier? Did you obtain this buffalo dog in the prescribed and lawful manner? And is this the only buffalo dog you will be transporting?"

"Yes, I am a licensed courier. Yes, I acquired this doggie appropriately, and yes, this is the only buffalo dog I'm transporting."

Loyoka stared at me, his face bore a look of surprise and stunned amazement. The customs officer nodded and waved me through, but Loyoka stopped me as I tried to go past, turning me back to him with a hand on my arm.

"One extra question for you, Mr. Conroy, if you please," he said. His eyes burned into mine. "Are you a smuggler, Mr. Conroy? Yes or no?"

Irritably I pushed his hand away. "You've asked me this before. I am not a smuggler."

He blinked and then turned to the other Arconi he had brought with him. Three other heads gave slight shakes and Loyoka returned his attention to me. "My apologies, Mr. Conroy, I appear to have misjudged you. Please, no offense intended."

"Right, you were just doing your job. Fine. Are we finished?"

"Completely. Safe travels to you, Mr. Conroy." With that he turned and left, the other three Arconi leaving with him. The customs officer gave me a perplexed look and signaled for the next person in line. I turned, and with Carla Espinoza safely under my arm, boarded the ship.

I proceeded to my assigned cabin and let myself in. My first impression was that I was in the wrong place. Or perhaps some other courier had mistakenly claimed my cabin. For whatever reason there was already a buffalo dog in the room, secured to a makeshift acceleration couch in a pen. I spun around to leave and saw a handmade sign I'd missed before because it was pinned to the back of the door. It read "SPUMONI HEIMDAHLH" in large, thick letters. I blinked, felt a moment's dizziness, and realized I was in the right room after all. I locked the door and moved to reset the cabin's atmospheric controls.

Many hours later, long after the *Eucephalous* was on its way back to Earth, one of Gibrahli's registered buffalo dog facilities discovered it was missing a doggie. Reggie and Carla were getting along fine, enthusiastically doing their part to ensure the first litter of buffalo pups born off Gibrahli. To his courier, Reggie was worth five hundred thousand. To a smuggler, plucking an extra buffalito was worth ten million. But I'm a hypnotist, and I was coming away with Earth's first fertile and soon-to-be-pregnant buffalo dog. I figured I could set my own price. That's show biz.



Selected Letters of the Master Astronomer to the Science Adviser

Terry Franklin

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13.1.1737

All of us at the Observatory are abuzz over the discovery. New knowledge is being uncovered daily. When we first noticed the bright lines last month, we assumed they were from the star (a yellow star named Atollus in the constellation Theel). The intermittent signals are on a close group of several very narrow frequencies around 2.5 billion cycles per second. We have now confirmed that the signals are actually originating on a planet orbiting Atollus. In fact, the planet is brighter than the star at these wavelengths!

So far, from timing when the sources blink off and on, we have been able to determine the planet's rotation period at over two days. We will need a longer baseline before Doppler shifts in the signals give us an accurate orbit for the planet, but preliminary data suggests its "year" is somewhat longer than ours. The planet's spin axis is moderately tilted relative to its orbital plane.

The signals themselves come from a cluster of twenty-one point (!) sources on the surface of the planet, with a 22nd located to the east of the others by 140°.

As to the physics of this phenomenon, my theorists are pouring out ideas non-stop; but whatever it is, it is definitely unique in the known cosmos.

61.1.1737

Scholars from every field are joining us from around the globe to study the aliens. The scene is chaotic. Scientists are working out of offices in tents. The Institute's new building is taking shape, dwarfing the old Observatory. Three new dish telescopes have been finished and brought on line in the past few days. I never imagined overseeing an enterprise of this size, and I must admit I feel overwhelmed.

Of course, "overwhelmed" does not even begin to touch on the awesomeness of alien communication!

I hope I will be worthy in this endeavor.

Thank you again for getting so much funding out of the Council. I don't suppose it could have gone any other way though, with public reaction what it is. The whole world is captivated by this discovery.

17.2.1737

When analyzed on an oscilloscope, the alien transmissions encode moving pictures. Associated with each signal, is another one which is offset by 27.52 megacycles, encoding what is believed to be an audio track. This second signal seems to be modulated by frequency—a previously unknown technique. My engineers are working furiously to design a demodulator.

6.10.1740

It is hard to summarize all that is known of these people. We know a lot—at least about an assortment of diverse aspects—yet so much of what we know is probably wrong. We are continually challenged to update our understanding, as we learn new characteristics of their language (see below) and culture, and discern our previous misconceptions. But new misconceptions must undoubtedly arise.

Here are some major things that we are pretty confident about: First of all, these television broadcasts are for internal communications on their planet. There is no evidence that they are intentionally transmitting to us. Second, they have a very advanced technology compared to ours, and have had it for quite a while. For instance, while radio waves are new to us, they have known about them for 260 years, and have been using them extensively (for audio only) for a long time, at much lower frequencies. Their atmosphere is like ours in that it traps lower frequencies under an ionized layer. It was only when they began to use video, with its higher bandwidth requirements, that they needed to broadcast at frequencies able to leave their planet.

About their culture, the most striking difference is that they do not have a planetary government. There are many separate ones, which are usually hostile to each other. The people are warlike, always killing and destroying in order to gain control over their enemies. They just finished a planet-wide war (the second in a generation); and a third one seems possible at any time. The different warrior groups (countries they call them) contain people with different cultures, viewpoints, systems of government and economy, subtle variations of phenotype, and even completely different languages. With very few exceptions, only one language is being broadcast; but that, we believe, is merely because one group had to be the first to start with television.

Different countries exist side by side with different levels of technology. This was a great source of confusion for my anthropologists at first. While we learned that dramas about some cultures, such as Romans or Vikings, are historical in nature; others, such as a series about a man named Tarzan, are set in a region of their planet where the people are surprisingly primitive; and these shows are presented as being in the present day.

Of course, we must constantly remind ourselves that the events, and the levels of development, we observe are actually sixty years old. That is the time it takes for radio waves to travel to us from Earth.

22.3.1742

I agree with you. It is very confusing trying to keep track of all the different time units that show up in my reports. We know the

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conversion factors to a high degree of accuracy. Here are our latest, and most precise figures:

1 year = .3011 Earth year
1 month = about .6 Earth month (varies)
no equivalent - 1 Earth week (7 Earth days)
1 day = .3506 Earth day
1 hour = 1.2723 Earth hours
1 minute = 1.2164 Earth minutes
1 second = 1.1455 Earth seconds

What I find even more confusing (despite how used to it I have become) is their numbering system. They use base twelve—since they have twelve fingers. (Their word for this number is *ten*.)

54.3.1744

More about their broadcasts: Almost one thousand stations are now transmitting from twenty-three countries on Earth. This keeps us terribly busy. We must constantly build new telescopes and learn new languages. So far, we have been able to keep up. I have told my division chiefs that we must never, ever, miss even one minute of television from Earth.

The transmission streams are usually divided into twenty-seven minute programs (some longer). They are intended to provide information and entertainment. All of the show types are valuable to us. The most common categories are sports, drama, and game shows. There are also programs about news, education, and "variety." The drama shows are divided into different classes: war, crime detection, medical, comic, historical, and interpersonal.

Romper Room, Howdy Doody, and the many children's cartoons are especially useful to us. We really are children when it comes to learning about the Earthlings. Many of the subtle nuances of psychology are less obscure in programs designed to entertain the young. I wish there were more of them.

It seems that everything these people do involves some kind of competition, from war on down. The largest class of programming is sports. Sporting events are often violent, for instance prizefighting and football. We are unable to tell whether sports are a form of practice for warfare, or in some sense, an attempt to substitute for it. Personally, I don't think the Earthlings themselves are able to tell. Even in more benign games such as baseball, the comradeship of those on a team, and among their "fans," reaches so much higher a level of emotion than anything we seem capable of achieving. I've watched my young scientists play baseball on their off hours. I don't think they really get it.

Another big class of programming is comedy. It took a long time to realize this. One's first conception of a highly advanced civilization is naturally that of utmost seriousness. But these Earthlings have a great sense of humor. Like everything else with them, it takes a while to understand the context of what you're watching. Eventually though, George Burns, Lucy Ricardo, and the Road Runner, will put you on the floor, rolling in laughter.

Finally, where would we be without their newsmen? In a sea of fiction and light entertainment, Douglas Edwards and John Cameron Swayze (along with Jack Paar and some other

showmen) give us a window on actual events occurring on Earth. It appears that the Earth dwellers themselves revere their newsmen enormously.

10.7.1751

We are prepared to begin our transmissions to Earth. I understand Councilman Othamum's concerns about the danger to Crann from the Earthlings, with their drive for conquest, their terrible weapons, and their ambition for spaceflight. I have studied their weapons extensively, and am fully sympathetic with His Excellency. However, the gulf between our planets is uncrossable.

In some of their dramas, journeys to other star systems do indeed take place; but these tales are fiction of a very speculative variety. Earth scientists are certain that the speed of light is an absolute limit. Our scientists have re-created this formulation, and concur. (My people are in awe of the intellectual sophistication on the part of Earth shown by this understanding.) Rockets have energy considerations that put their actual speeds far below this restriction. With the rockets they are developing, it would take an "invasion force" 100,000 years to reach us.

56.6.1754

The people of Earth have obviously thought a great deal about the existence of other intelligent life-forms in our galaxy. Aliens appear in all types of shows, from their children's Colonel Bleep, to major "Hollywood" movies such as *The Day the Earth Stood Still*. All of these aliens are fictional. There is absolutely no evidence that the Earthlings know of any other races in reality.

One fascinating insight: Their "aliens" come in all shapes and sizes. Some are funny, some are serious. They are often hostile, though many are not. But in almost every case, when compared to their imaginary aliens, it is Earth's culture that is inferior.

38.5.1756

The Earthlings have launched a rocket into orbit around their planet. This was done by the Soviet Union. As you recall, the foremost political schism on Earth is between the United States, with its many friends, and the Soviet Union. This Sputnik rocket has increased the military tension, and spread fear through the "Western Block."

It is too bad we know so little about the Soviet Union from its own sources. Four television channels are broadcast in Moscow, its capital. They are on for a part of each day (with test patterns during the off hours). In contrast to the loose nature of the other countries' programming, their shows are mostly highly stylized dramas and tightly controlled news. Of course this tells us a lot about the government; but not much about the people, who, if you believe U.S. television, don't like their government very much.

6.4.1762

The principal weapon on Earth is the atomic bomb. It was developed at the very end of the most recent planetary war, and hasn't been used much in actual combat. The United States and

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the Soviet Union, though, often explode ever larger and more powerful ones in remote places, in order to intimidate each other.

Fear of these bombs preoccupies their minds. As does preparation for their use. Atomic bombs show up in all programming, from children's cartoons, to educational programs for farmers, to adventure shows, to diplomatic news.

If used extensively against cities, they would be devastating to Earth's civilization. Yet both sides target their bombs on each other's cities. Every few years, someone tries to develop a strategy to target each side's bombs against their enemy's bombs. This is highly dangerous though, since it would give an advantage to anyone making a surprise attack. "A hair trigger situation" is the term they use. The anti-city strategy is thought to lead to a more stable balance, but the Earthlings are far from calm with it.

An atomic bomb works by breaking up atoms of a metal called uranium. Since we know from their broadcasts its chemical characteristics, we have been able to isolate it. It's so rare that we never discovered it ourselves, and have no name for it. My chemists have taken to calling it *uranium*. To break its atoms requires neutrons. Neutron production is far beyond anything our science understands.

35.3.1767

The Earth is a large place, and it harbors a wide variety of non-human animals. Some of them appear to be quite intelligent. In addition to many in cartoons, animals act as characters in live programs, usually comedies, like the *Hathaways*, very human-like chimpanzees, or *Mister Ed*, the horse who speaks (they don't really). A few appear in serious dramas: *Rin Tin Tin* and *Lassie*, dogs, and *Flipper*, a dolphin. Their intelligence is not entirely fictional—the animals have to be smart enough to be able to "act" in the production of these shows.

14.2.1768

We are finally breathing again. The Americans and Russians just had a serious confrontation over the island of Cuba, which almost resulted in the great war we all fear. Things have been resolved peacefully—at least for now—but the future is precarious. For a while there, I thought they were about to go black on us forever. I am sorely tempted to put a plea into our transmission stream, begging them to live together, the way we do. But it would be so presumptuous to try to give advice to such a highly advanced species.

23.5.1775

Earth's television broadcasts are in color now.

51.4.2002

As you know, these people's reproduction has long been a puzzle to us. There are two different kinds of human. One of each kind must get together in some way in order to have offspring. Despite there being a fascination for them even greater than war (at least from what we can determine from their television), amazingly we have never been able to figure out what it is that

they actually do. I've had a whole division dedicated to this mystery.

Finally, some countries in the region called Asia have started to transmit. Apparently they have a different culture, one that is not quite so secretive.

I know how curious you are, having asked about this so many times. I'll send you some tapes.

31.7.2007

The Earth Institute has become the major source of science and technology for the people of our planet. Indeed, with the exception of laboratories working on our indigenous biology, geology, and our local astronomy, every academy has become a virtual subset of the Institute. You can't believe how proud this makes me.

We are picking up technical information faster than we can put it to use, and actually much faster than we could have developed it ourselves. Earth's knowledge is immense, but since its scientists don't communicate by television (except with occasional educational shows for the general public), we must infer a lot from the devices that show up in regular programming and advertising. It's a real detective job.

In fact, television itself is an example of an instrument we learned about from Earth. While we were able to receive their signals, the ability to produce such signals was beyond us. It would have been possible to transcribe by hand, line by line, and frame by frame, a moving picture; but what we really needed was a vidicon tube camera. Well, we've worked out the details, and now, with Earth's inadvertent help, Crann will enjoy the benefits of television.

Flying machines are coming along successfully as well. You've seen the pictures of our latest test flight. The K-1 is small and primitive—but it's not half bad! Of course it's a far cry from Earth, where they use planes by the thousand for routine transportation. (And their rockets have already taken them to their moon three times.)

As you are aware, I have at least one scientist examining every second of every program from every station on Earth. The Earthlings would probably use their electronic brains for such a task. Don't worry—we're studying the properties of silicon intensively.

I wish we could use more of their expertise in agriculture to increase our food production, but I'm afraid that the fundamental biology is just too different for direct copying to work. Some of their biochemistry may help though. We can also profit from their adeptness at seeing big pictures and small intricacies together—systems research—and this applies not only to biological systems, but also to economics, sociology, and to the aforementioned electronic brains as well.

In basic (non-applied) science too, they far surpass us. Their understanding of the Universe is awe-inspiring. They have a rich assortment of religions, and this itself is fascinating, especially for the anthropologists; but what brings me my greatest joy is their scientific cosmology.

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One area of Earth's technology is causing us some worry. They are working on coaxial cables, optical fibers, tightly focused microwave beams, and data networks. What will we do if they stop broadcasting?

21.1.2011

The current state of society on Earth is terribly chaotic. In recent years, the United States, and most other countries, have been in turmoil over values and ideologies. Sometimes it seems that these people are almost at war with their offspring. As always, it is both tragic and funny at the same time. This dichotomy can be seen within individual episodes of the Smothers Brothers' show.

40.3.2017

There is concern on Earth that their population and industrial products are damaging their planet's long-term sustainability. This has given some of us pause—since we copy so much of what they do. Take for instance the technology of hydrocarbon polymers. We consider plastics to be one of the greatest blessings given to us by the Earthlings. Yet in one of their movies, the very word is treated with derision.

Earth people seem to be more "consumer oriented" than we are—although this may be simply because they have so many more "things" available to them. This "materialism" however is under philosophical attack. Maynard G. Krebs (seen now only in reruns) has always been one of my favorite critics in these matters.

As an aside: The "pro-materialism" argument is delivered in the form of product presentations called commercials. They are one of our most valuable tools in deciphering human psychology. The quantity of commercials is vast—greater than the regular programs. Since television must have a line-of-sight between the transmitter and receiver, there are a great many local reception areas on Earth. The major shows are usually duplicated simultaneously on a large number of stations, but quite often the commercials vary from region to region. My advertising division records and studies all of them.

46.6.2040

One problem we've always known we've had with the transmissions is handedness. Everything we see on our screens—and this is especially important with regards to writing—may be backwards. What we are used to seeing as normal English words might be what the Earthlings would see in a mirror. My staff has given this deep thought. There seemed absolutely no way to solve this dilemma, short of persuading the Earthlings to send us polarized waves that rotated with time. Earth has come through again though with the answer. There is a science education show called Nova. In one episode, they stated that the "weak force" is asymmetric, and it gives a universal standard of left and right.

We're going to need cobalt 60 in order to do the calibration. It may be several more years until we can make some. We know

how, but it's a matter of our engineering infrastructure catching up with our knowledge.

27.2.2051

The Institute has grown so vast, that neither I, nor my division chiefs, watch much television anymore. Administrative duties keep us so busy, we rarely have time for "raw" programs. We are only able to look at analyses, statistics, and reports. I do manage to watch a little though. Everyone knows to call me in when we get a show that exposes the answer to something which has puzzled us for a long time. I also sometimes watch Ted Koppel or Charlie Rose for "late breaking" cultural or diplomatic occurrences. (They even provide the analysis.) Likewise, Professor Magnell for deeper philosophical matters.

I must admit I watch for pleasure too. I can't miss the latest episode of Hill Street Blues.

54.4.2057

A synopsis of long-term trends on Earth: Most strikingly, and this is no mean accomplishment, they have managed to survive this period of their history. In fact, they are doing incredibly well. Quite prosperous too.

There is less conflict. Countries are cooperating with each other more than ever before. Race relations have improved. They are moving towards a common language. Russia and America are even working on a space station together.

Space exploration progresses. As do all fields of science. Genetic engineering is a particularly "hot" area these days.

The jury is still out (to use one of their expressions) on some strategic problems involving lingering pockets of nationalism, and also on the matter of overpopulation. But, overall, things couldn't be better for our neighbors in the Universe.

36.1.2101

We're both such old men now, my dear fellow. So many changes we've seen in our lifetime. People have become so complacent these days about Earth Studies. Remember how exciting it was when we first started? I imagine there will someday be a Crann Studies Institute on some planet—our TV signals will soon be reaching hundreds of star systems. They will, of course, also be receiving Earth. I often wonder if they will be able to tell on which of our planets Shakespeare or the Grateful Dead first originated.

Earth, though, will be the first to hear from us. My archivists have reviewed our early audio transmissions. There is no question at all they can answer, that we haven't figured out already from their broadcasts in the intervening years—except one: How will they react to contact?

Much as our globe lit up once, theirs is going to light up with the news of their discovery of us.

Please join me to watch a little television, next Thursday, at 7:30 P.M., Greenwich time.



Primary Ignition

The Longest Eye

by Allen Steele

The road to Kitt Peak is Highway 86, a two-lane strip of blacktop that leads southeast from Tucson straight across tan Arizona desert. The baked landscape is dotted with saguaro cactus, wiry mesquite trees and tumbleweed bushes; the occasional prairie dog regards you from outside his hole. The shark-tooth peaks of the Comobabi Mountains rise to the west, yet the desert is so flat it's difficult to gauge just how far away they are. With the mid-morning temperature hovering at about 95 degrees and black vultures ominously gyrating across the cloudless blue sky, your luck is busted if you run out of gas.

Just as you come to the town of Pak Tan—not much of a town, really; a weather-beaten general store and a couple of broken-down mobile homes—you see a sign pointing to the left: Kitt Peak National Observatory. By then, the observatory itself has become visible: small white domes, unreal artifacts of human presence, perched atop a towering reddish-brown rock that looks as if it might have served as the model for an old Chesley Bonestell painting of the Moon. Take the turn, and as you approach the base of the mountain you soon find that you can't see those domes any more; without giving yourself a crick in the neck.

The road to the summit is twelve miles long, and frequently makes turns so harrowing that the pucker factor reaches a



solid ten; the further up you go, the more narrow it becomes, and more often than not there's no guardrails separating you from a long, rolling plummet down the mountainside into one of one of deep ravines far below. Every so often, though, there's a place where you can pull off, get out of your car, and take in the view. Now it's clear the plain you've just driven across is the floor of a broad valley, one that has remained essentially unchanged over the course of millennia. Gaze upon this place, and you're staring into the silent eyes of time.

A few more relentless turns, a fleeting glimpse of a lonesome cow which, strangely enough at this altitude, is contentedly grazing

upon the high desert grass in a gully just off the roadside, and suddenly you arrive at the long ridgeline that runs along the top of the mountain. At 6,875 feet, the air is much cooler up here, much like that of Los Angeles in early autumn except more clear, without the burnt-carbon aftertaste of automobile exhaust. Everything is quiet, almost eerily silent; speak a little too loudly, and it seems as if your voice could be carried for miles.

And everywhere you look, you see observatories. Rising above the pines, dome after dome, shed after shed, some small, some large; just when you think you've counted the last one, you come around a bend in the road and there's yet another. There's eleven observatories scattered along Kitt Peak, containing twenty-five different optical and radio telescopes, owned and operated by the state universities of Arizona, Michigan, and Wisconsin and the Ivy League schools of Yale, Dartmouth, and MIT, ranging from Case Western University's 0.6 Burrell Schmidt telescope to MIT/NASA's 0.18-meter Explosive Transient Camera/Rapidly Moving Telescope. Here, the National Observatory's 4-meter Mayall, the first major telescope erected on the mountain; there, the Steward Observatory's two Spacewatch reflectors that stand sentry duty for Earth-orbit crossing asteroids that may one day pose a threat to us all.

You're still on Earth, this much is certain, yet in some way you've left it behind. You've crossed the line, and now you're in the Realm of the Long Eyes.

That's what the local Native Americans called the observatory shortly after it was dedicated in 1960. Although the mountain was named Kitt Peak in 1874 by Pima County surveyor George Roskruge after his sister Philippa Kitt, the Tohono O'dham called it Ioligam, and it lies on their reservation. In 1958 the United States government negotiated a permanent lease with the tribe for the construction of the observatory, yet astronomers have to abide by a number of rules; no military research may be conducted up here, no commercial operations such as restaurants or hotels, and the foot trails are strictly off-limits since they



Kitt Peak as seen from Highway 86

Absolute Magnitude

lead to sacred shrines. In addition, a certain number of Native Americans must always be employed by the observatory; at present, there's about twenty Tohono O'odham working at Kitt Peak.

The observatory is operated by the National Optical Astronomy Observatories (NOAO), which in turn is managed by the Association of Universities for Research in Astronomy (AURA) in cooperation with the National Science Foundation. Walking along the main road that winds along the ridgeline, you get the impression that you're visiting the campus of some isolated western college. Scattered among the domes and radio masts are labs, offices, supply sheds, and a small visitor's center with its own 0.4 meter reflector. An electric forklift glides past, carrying tanks of liquid nitrogen to one of the larger telescopes where it will be used as coolant for its cameras. A motel-like dormitory has a sign out front: Quiet Please—Day Sleepers; these are the astronomers who work all night and sleep during the daytime hours, not getting out of bed until late in the afternoon. Just across the road is a basketball court; one can easily imagine a handful of skywatchers shooting a few hoops during downtime on overcast evenings.

Yet not every telescope is dependent upon having a good night sky. Perched upon the southern end of the ridge is the oddest structure on the mountain: an enormous square-sided construct that resembles the letter "N" with its right leg missing. Indeed, if you didn't know better, you might think it was one of those enigmatic works of modern sculpture found in pedestrian malls of major midwestern cities. Yet substance is often

more important than style, and in science necessity dictates form; what you're looking at is the McMath-Pierce Solar Telescope Facility.

Built in 1962 and dedicated by President John F. Kennedy, the McMath-Pierce is a major part of SOLIS—Synoptic Long-term Investigations of the Sun—a 25-year project to observe the sun through spectral, magnetic and direct-imaging measurements. The 100-foot tower and its slope-sided leg is only the top part of the telescope; the optical tunnel runs deep underground, boring straight into the mountain itself. Five hundred feet in length, the McMath-Pierce is the world's largest optical telescope.

Why does it have to be so large? Picture the inside of a conventional telescope: the aperture is located at the top, where the image you wish to study is captured and shunted down the barrel to an angled primary mirror near the base, which in turn reflects the image into a lens that the viewer focuses for clarity. With a telescope 135 feet longer than an old Saturn V rocket, though, it's impossible to move the telescope itself. Also, as your grade-school teacher told you so many times, it's not a very wise thing to stare straight at the sun. If that's true with the naked eye, then consider the risk of doing so with a telescope; one glimpse through the eyepiece, and your retina is fried. Even if you insert a darkened solar lens, you won't get a clear image good enough for serious astronomical research. So how do you solve the problem?

Answer: you build the telescope upside down.

On the flat roof of the McMath-Pierce are three heliostats, or solar telescopes; the main heliostat has a mirror 1.6-meters in diameter,

and the other two are 0.9-meter auxiliaries. The heliostat can be rotated to track the sun as it moves East-to-West across the sky. Once the image is captured, the light-ray is reflected down the long shaft of the optical tunnel.

At the base of the aboveground part of the tunnel—the angled part of the broken "N"—is a small, glass-enclosed visitor's gallery. Step inside, and you find yourself within a long shaft inclined at a 45-degree angle. The interior is gloomy, but you can see the ribbed walls of the shaft; coolant circulated through tubes wrapped around the tunnel keep the interior at a constant temperature of 550 F. Look up, and at the top of the angled shaft you see the heliostat, a large white machine outlined by the blue sky behind it.

Now, look down. You can't see the bottom of the optical tunnel from where you're standing, yet from far below you see a weird thing: bright morning sunlight coming from deep within the mountain. That's the reflection of the sun from a 1.6-meter concave mirror positioned at the bottom of the shaft.

Directly across from you is a 1.5-meter mirror mounted on a truck that runs up and down the side of the tunnel along a cog rail. This third mirror reflects the light-ray from the concave mirror below you through a narrow hole in the floor of the shaft, which in turn leads to the observation room.

If this arrangement sounds confusing, try to re-imagine the telescope as a narrow billiards table. There's only one pocket, and it's positioned halfway down the table; there's also bumpers at the top of the table and in its center. A straight shot into the pocket is impossible, so you have to bank the ball off the sides of the table and the bumpers. So you put a little English behind the ball and knock it off the first bumper; the ball rolls down to the opposite side of the table, where it bounces back up to the second bumper, where it bounces sideways into the pocket. A three-corner shot worthy of Minnesota Fats . . . except in this case, the ball is a ray of light, the bumpers are mirrors, and the pocket is the hole leading to the observation room.

The observation room is located underground, at the end of a long corridor that you enter through a doorway beneath the bluff upon which the telescope is erected. On one side of the room is the telescope's control panel, which operates the alignment of the mirrors. Digital readouts display declination, hour angle, and focus. On top of the panel is



The McMath-Pierce Solar Telescope

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a black-and-white TV monitor that displays a monochromatic image of the sun; on the screen, the largest object in the solar system resembles nothing more than a frayed white tennis ball.

The room has a high ceiling, in the center of which is the hole leading to the optical shaft. Positioned directly beneath the hole is an elevated platform, and cast upon the white Formica surface of its hexagonal viewing table is a thirty-six-inch image of the sun, larger sharper in clarity than one displayed on the nearby TV screen. An astronomer stands on the platform, jotting down notes as he peers at the image captured by the enormous telescope above him.

For forty years, the "men with long eyes" have studied the sun from within this cool, quiet room. Sunspots a hundred times the diameter of Earth have been observed, and the wood-paneled walls are decorated with poster-size photos of solar coronae and flares.

Long eyes, indeed. And it tells you something about the civilization that built them.

Basic scientific research is regularly attacked within this country. This is not a new story; every time some political hack wants to appeal to his constituents as being a man of the people, he sets his sights upon major programs that seem to have no purpose, and science—always mysterious to the layman, sometimes threatening to the ignorant—frequently presents itself as an easy target. William Proxmire, the late-Democratic senator from Wisconsin, based his entire career upon criticizing scientific research programs, and in recent years it's become commonplace for politicians and pundits from both the left and right to protest

the money spent on "big science." Everything from cyclotrons to space probes have been killed this way; both Richard Nixon and Walter Mondale can be blamed for the reason why NASA didn't send men to Mars by the end of the 20th century. Indeed, the most remarkable thing about the Human Genome Project may be less of what has been actually accomplished than the fact that it was accomplished at all.

The National Science Foundation has suffered the impact of federal budget cutbacks, and Kitt Peak has taken its share of hits. Six of its telescopes were recently scheduled to be closed until money privately raised by the universities belonging to AURA allowed five to remain open; however, the microwave radio telescope near the McMath-Pierce still slated for shutdown. Meanwhile, Boston's freeway construction project, the infamous "Big Dig" that has destroyed entire neighborhoods in the downtown area, now has a projected final cost of \$16 billion, much of which has gone unaccounted for by its contractors.

There's no easy way to put a price tag on the expansion of human knowledge. Why study the sun? a cynic may ask. How is this going to put money in my pocket? How is this going to win me votes? Yet forty-two years ago the Tohono O'odham, a small and virtually unknown Native American tribe, made the decision to lease to the United States—a government to which no Indian has ever owed any favors—the mountain ridge said to be a favorite resting place of one of its gods. Perhaps the tribal elders saw potential profit from having such a important scientific installation in their midst, but it's also possible that they chose to take the long view: here, upon the mountain called Ioligam,

humankind would learn things that would bring it in closer harmony with the universe it inhabited.

One of the measures of any great civilization is what it learns during its existence, and what it passes on to its descendants. The checks written for the construction of the world's largest telescope have long since been cashed and spent, and whatever modest political gain John F. Kennedy may have garnered from his dedication the McMath-Pierce is largely remembered only by the letter he sent from Washington D.C., now displayed in the Kitt Peak visitor's center. Money and politics are ephemeral, though. Knowledge is priceless.

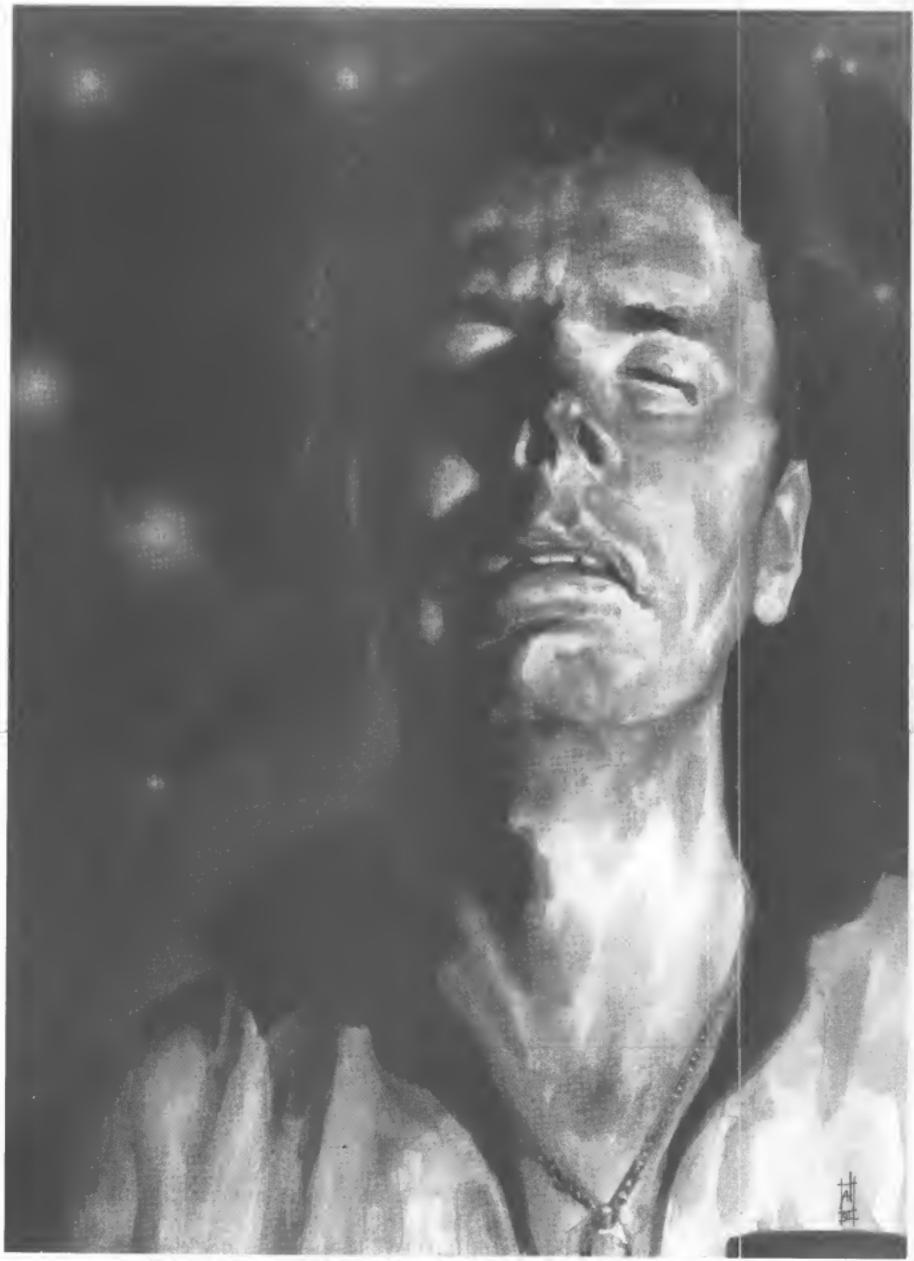
Go to the mountain, and these are the things you'll see. If you've got long eyes.



The telescope's control panel



The observation room's viewing table



The Man Who Smelled of Death

by Chris Bunch

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The tiny ship moved closer to the ruined battleship, turning in a lazy orbit far distant from the nearest planet. Magnetic grapples drifted across, anchored the ship to the wreckage, near a great tear where a missile had killed the warship.

Claws emerged from under its nose, took firm hold of the ship's skin, tore it back. The claws went into the ship, then came out. A single arm reached in, and blue flame jetted.

The claws tried again, through the widened cut, extended still farther.

They slowly came back out, holding something.

It was the desiccated torso of a man, face still gaping in last horror through his faceplate.

A bay opened, and the claws put the half-corpse inside the small ship. The bay closed, and the claws reached once more into the battleship.

The small ship "mined" the warship for another turning of the empty cosmos around, then it ungrappled, its secondary drive pulsed, and it set an orbit to the nearby ruin of a destroyer.

I returned to the Hara System more than three years after the Great War had swept through, leaving silence and carnage behind.

I found it somewhat fitting that I'd been assigned as Governor-General to worlds as shattered as these. In the Second Battle of Hara, my destroyer had been hit by two Endarchy missiles, then one of their fighter-craft dove into the engine spaces and the ship exploded.

I was told later it too's three ship-days for them to discover the slowly turning ruin of my *Compass Rose*, another two to find the handful of survivors trapped in the twisted alloy.

I, fortunately, was unconscious, my suit system having committed the triage it had been designed to do, and then cut my oxygen flow back to survival level.

Perhaps I suffered some brain damage. I don't know—I don't think I did, am able to remember everything in my life until that first day of battle quite vividly, hadn't had any trouble functioning within society since then.

The damage I did take was considerable, and so it took me three e-months to come out of a drifting coma of painkillers and take stock.

I was almost as wrecked as my ship: my right leg had been blown off when the second missile struck, and shrapnel from the blast had taken out my right eye and pieces of that side of my face. My right arm had been almost severed, and the suit did the rest, razor sealant panels amputating the dangling fragments as cleanly as any surgeon's laser.

It took half a year to attach various prosthetics, rebuild my face so I had a career option beyond terrifying children, and teach me to use all my new parts.

I could have taken a medical discharge, of course, but for what purpose? My family was nothing more than radioactive gas after the carpet-bombing of Altair VI, commonly known as Tranquility, and I saw no end in being yet another of the hobbling half-dead to be seen on any city street or in any cheap bar.

With ten years in service, I had more than enough contacts, including several personnel rabbis to convince the naval bureaucracy I wanted to remain with the Fleet, at least until the war was over or I decided on what should come next.

I came out of the rehab center with various ribbons on my chest that I found meaningless, considering I was the one who'd taken my ship into the path of ruin and death, the rank of Commander, and an assignment, ironically, back to Hara.

At least I wasn't as embittered as many of the other Resurrected, as those of us who'd been badly wounded and mechanically/electronically rebuilt called ourselves.

And so I star-hopped, accompanied by a single dufflebag of personal items and half a shipping container of instructions and rules, to the half-ruined tropic world of Hara Three, its capital, which the inhabitants called Safehome.

I'd never landed there before, since before the war it was a backwater, then during the war it was occupied by the Endarchy. Also, its ruling inhabitants had been, if not quite allies of the Endarchy, certainly sympathetic to their always poorly-defined cause.

Not that there would have been much joy for me, or for any of my sailors, if we had been granted passes on the planet before the Endarchs built bases and defenses.

It had a population of around ten million, two other worlds in the system having about five million each.

Safehome had been settled in three waves. The first was probably by one of the ancient longliners. These colonists either slipped back down into savagery during the centuries-long passage and were dumped by the automatic landing process, or reverted once they'd made planet-fall. These denied any knowledge of Earth or starships, not uncommon among early settlers.

They found an easy life as slash-and-burn settlers, occasional hunters, as long as they could stay ahead of the strange predators in the shallows of the seas, and the even more dangerous, still mostly-unknown, killers in the deep jungle.

They were called; by the later colonists, *Barbars*.

The second wave had arrived in the Hara system within the past 300 years. These were mostly the losers in a nasty in-

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system revolution that'd driven out its brutish upper class, and established something not too distant from democracy.

These, the *Ristos*, came with money and trading contacts. They immediately found fruits, spices, nuts that would be of interest on other worlds, set up plantations to regularize the supply. At first, they tried to use the Barbarians for a labor force, but this was unsatisfactory—the people of the hills walked away from any task they found annoying, and, as likely as not, put a stainless steel ball bearing from one of their muskets through the one who'd put them to it. So the Ristos brought in contract labor, which they called *Courbs*. Some stayed on after their contracts expired, in shantytowns outside Safehome's handful of cities, slowly became the small merchants and craftsman Safehome needed.

Good worlds, a not very good social system, but not that different from a hundred or five hundred other colonial systems. If there was nothing else around them, Hara would have had no interest to either Allies or the Endarchy.

But less than a light-second distant was the Loki system. Uninhabited, almost uninhabitable, five of its ten planets were almost impossibly mineral rich, particularly in those metals used for alloys in the ship-building business.

When the "territorial" disputes began between the Allied worlds and the dissident worlds who'd chosen to live under an autocracy, that would later name themselves the Endarchy, Loki was one of the first seized. The Endarchy not only developed mines, but moved four armored planetoids in to guard the works. Later, four others were moved through space as backup, and six other planetoids, these completely artificial, became raiding platforms for Endarchy ships.

The Hara System welcomed the Endarchs, as much as they could welcome any outsider, since their ideas of the hierarchy of man matched their own.

The situation became intolerable for the Allies. Within the first year of the Endarchy's declaration of war, they sent a fleet in, expecting an easy victory, planning to use Hara as a springboard to strike against Loki.

But there'd been intelligence leaks, bragging by admirals, and a slow, stately progress toward battle.

Four Endarch fleets had been waiting, and the First Battle of Hara was an Allied disaster, thousands of our troops being killed, over 100 ships lost, to half that by the enemy. The battle had been a strange mixture of purported treason and utter heroism, more confusedly fought than most battles, since it happened at the start of the war.

We reeled back, fought other battles in other sectors, while the Endarchy built bases on Safehome, one other of Hara's worlds. Then the Allies came back, with two huge fleets.

The Second Battle of Hara was a victory, of sorts, for the Allies. The losses on our side were about the same as at First Hara, but the Endarchs lost half again as many ships and men.

Now it was their turn to retreat.

They left behind a planet that had been bombed and rocketed again and again. Perhaps a third of the jungles had

burnt, the populace forced to flee the cities or huddle in underground shelters while hell cam: and went overhead.

I was being peeled out of a wreck, and slowly reconstructed, so I missed First Loki, for which the True Buddha be praised.

That was a nightmare of killing, dying, explosions, and wreckage. Six swept in against the Endarch planetoids, and their defenses couldn't hold the missiles back. The battle took an E-week, and we lost over a million men, more than a thousand vessels. But the Endarch took twice as many casualties. Their satellites were destroyed, and their ships driven out of the Loki system forever.

Now I was sent to Hara, a backwater once more, my command just over 200 men. We had various missions—dealing with the various civil actions brought against the Allies by Hara's civilians; medical claims and treatment; a psychological warfare team, trying to convince the people that the Allies had always been in the right; and a salvage specialty team, locating Allied wrecks, pinpointing them on charts, for eventual recovery by tugs, who'd haul them back to Allied factory worlds, to be stripped and melted down to make new warships. Plus, of course, half a dozen skilled hustlers, such as any Army produces, who'd managed to convince someone the Mission to Hara needed liaison specialists with the Ristos, specializing in liaising with their sons and daughters, with an adequate amount of the local wine to lubricate matters.

And there was one other, but I didn't meet him for a time.

My command was about what you'd expect in such a backwater—some crippled fools like me, who'd zigged when they should've zagged; skilled shirkers of danger; some retreats who'd retired ten or more years before the war, but had to creak back in uniform; more than a few conscientious objectors, who were willing to serve as long as it didn't involve killing; some round pegs in square holes; and of course, a scattering of criminals of the nonviolent sort.

One such was my executive officer, Nan Erdman, who'd been caught and court-martialed for diverting supplies from a rear echelon base to her fighting unit. I knew that a Mission like mine, on the other edge of nowhere, needed a skilled thief, so I'd interviewed her, told her if she got caught again she'd be dancing Danny Deever, and to go to work, and know more than I did about the unit and the worlds ASAP. Six months or a year with me should expunge her record, and she could, if she wished, apply for a transfer back to combat. She accepted, and was sent out an E-month before I was able to get clear of my final, rather meaningless briefings.

Erdman had done a good job, I decided, on arrival. I was scrolling through my Table of Organization, memorizing names, and found a strange slot, attached to my salvage team: Graves Registration & Relocation, held by a Specialist Klaus Proudhon.

I buzzed Erdman, asked who he was, more to the point, *why* he was. The Graves Registration Unit should have gone through the Hara System as soon as the shooting was over,

The Man Who Smelled of Death

picking up bodies and arranging for their burial, cremation or transmission to their home of record when circumstances permitted. A section of Safehome that had once been the Ristos' sports field now was row on row of close-packed graves, a kilometer long by half again that wide, and a mausoleum behind it with the thousands of small, ash-filled boxes.

"They did, sir. But do you really think they found *all* the bodies?"

I should have realized that myself, remembering there were still warriors listed as Missing In Action from aeons-old wars fought before spaceships.

"Plus," Erdman went on, "there are some families willing to pay for disinterment, and removal. Erdman handles that, as well."

I wondered what it was like to still have a family, discarded the thought as self-pitying nonsense.

"I wonder who this Proudhon is, and who he pissed off badly enough at the repple-depple to get stuck in that slot."

Erdman pointed to the screen.

VOLUNTEER, it read.

"Strange," I said.

"He is that, sir. He has his own ship, and his own quarters, on the far side of the field."

"Why isn't he barracked with the salvagers?"

"Because," and Erdman made a wry face, "they swear he smells like death. And he said he'd rather bunk by himself, anyway."

I knew the smell of death well. I'd smelt it soft back during peacetime, after an accident, strong during the war when I'd boarded a dead starship that'd still kept hull integrity, or led a detail onto a once-hostile world to do a Damage Assessment.

It's a smell that can't be forgotten, not ever. It only differs in intensity. It's sweet, too sweet, loathsome in the way the scent of some tropic, predator flowers is. It's not just rotting meat and shit, although those are part of it. There's also a acidic pull that sticks to the hairs of your nose. Drawn in deeply, by accident, the stink can produce instant vomiting, particularly from the innocent.

I've tried to find more specific comparisons before, failed. It is something utterly unique, and can linger around a death site for days after the bodies have been taken away.

I've talked to men who've visited ancient battlefields, and they swear they can still detect the reek. I don't know if that's the mind aiding the senses, or fact.

"I think," I told Erdman, "I'd like a word with this Proudhon."

"I'll com him, notify him when he lands to report immediately to you."

"No," I said. "I want to see his ship ... and where he lives."

Erdman called up another screen.

"He's on Hara Four right now, scheduled to return the day after tomorrow."

"Put a note on his board that I'll inspect his working area then, at, oh, 1900 hours."

"Sir, you've got dinner with Premier Lassy that night."

"Duty calls me away," I said. I didn't like Lassy, his ever-so-genteel manners and pretentious habits and hating eyes, his fat shrew of a wife, his daughters who seemed determined to sleep with every man and woman between the ages of 20 and 50 in my unit, or their effeminate son who fancied himself a composer.

Being around the daughters made me realize there was compensation for my wounds.

"You can go in my place."

"Oh, thank you, sir."

"Believe me, my privilege."

Proudhon's ship was a bit strange-looking: a small, obsolescent scout, I guessed of the *Buffalo* class, that had been stretched, its drive tubes moved up to the upper part of the stern, and a loading ramp and lock installed below. The hull had been anodized shiny black, appropriate, I guessed, for its assignment. A blaster had been mounted below its nose, with retractable waldoes.

It was in a revetment at the edge of the field. Behind it was an issue four-man all-weather shelter, and next to the shelter a low concrete building with a steel door on either side, a compressor next to the rear door. On the roof was a filtered smokestack.

I called at the shelter, got no answer, went to the building and rapped on the door.

A muffled voice came from within. I waited, then knocked once more.

The door banged open, and a man stuck his head out.

"I said, I'm busy ... oh. Sorry, sir." He started to salute, realized he didn't have a cover, thought that was important, and sort of knuckled his forehead. I tried to keep from grinning.

Klaus Proudhon looked like anyone's idea of a bumpkin. He was tall, just short of two meters, extremely thin, without shoulders or hips. His untailed flight suit looked as if he could have fit his brother in with him. He had a sallow face, and hair that, even in a close-crop, managed to stick up at angles like an antenna farm. His black eyes were the most active things about him, darting here and there. He came to attention, or what I supposed he thought was attention. But none of us were very spit-and-polish any more, except the detachment's military police.

"At ease, Specialist."

"Yessir."

He shifted back and forth on two feet that could have let him stride across quicksand without sinking, and had great paws to match.

"I'm your new CO, Commander Costilla."

"Yessir. I know, sir. One of the cooks pointed you out to me."

"I thought it might be a good idea to inspect your little domain."

"Where death delights," he said softly.

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"I beg your pardon?"

"Nothing, sir. But let me start with my ship, sir, if I could. That's where everything starts."

Or ends, I learned, as we went through the scout. There was a loading bay on one side of the ship, where a body, or part of a body, could be taken aboard from space, using the waldoes. Once aboard, hopefully in vacuum, the body was sealed in a sterile bag. Any identity tags or clues to who the body might have belonged to could be entered into a computer in this bay.

"I can carry up to twenty does, sir."

"Does?"

"Yessir. Corpi delicti. Jondoes, we were taught to call them, in training. The instructors told us that keeps anyone from behaving disrespectfully, using slang toward the deceased."

"You mean there's an Allied school for this?"

"Oh, yessir. There were forty in my graduating class, and they run six classes an e-year. And that's just on Samedi II. There's two other schools on other worlds."

Death wasn't a dying business, I realized. At least not as long as the war dragged on.

"So you bring them back here," I prodded. "Then?"

His eyes shot back and forth.

"Well, sir, sometimes, especially when the doe hasn't been recovered from space, but on-planet, the remains aren't as ... attractive as they might be. Even in space, the effects of battle can, well—"

"I was in a few," I said dryly. "I know how messy it gets."

"Yessir. Well, sir, sometimes I have to irradiate the pack, if local life-forms have become resident in the remains. Sometimes I even have to open the pack, dispose of the life-forms, then repackage it.

"That's when the dependents have made a specific request that the remains be returned for burial.

"I don't like that, sir. People shouldn't be made to see what someone they care about looks like, or if there's just part of her, or him.

"That's why I like to have the address of a funeral business to send the remains to if the doe is going off-planet. They understand, and can make sure there's a closed casket funeral

or even, I've heard, weighting the casket properly so it appears an entire corpse is inside."

"Go on," I said.

"It's best when the standard policy of cremation can be applied. Then I can take them into my crematorium ... that's the building you came to ... and dispose of them.

"But I got ahead of myself, sir. First, when I've recovered the remains, and hopefully been able to identify them, and the records show an address of record, I can attempt to notify their kinfolk for instructions.

"While I wait, which is a regulated two E-weeks, the body-packs are held at -20 degrees Centigrade, in a refrigerator that's behind the crematorium."

"What about bodies of Endarchy fighters?"

"I bring them back, too. They're human ... were, anyway. And sooner or later this war's going to be over. Those who have ID tags with a religion whose customs I recognize get buried ... I set aside a plot away from the Allied cemetery. The others are cremated. I keep records, for after the war."

Not having any more questions, and knowing more about the art of body disposal than I wanted, I finished inspecting the ship. It was as clean, as sterile, as any operating room, as were the cooler and the crematorium.

Yet still, perhaps only in my mind, the stink of death hung close about us.

"I have a question, Specialist," I said, after congratulating him on his orderliness.

"Yes, sir."

"I noticed, in your file, that you volunteered for this assignment. Some might think that's a bit unusual. Could I ask, if it's not intruding unwarrantedly, why?"

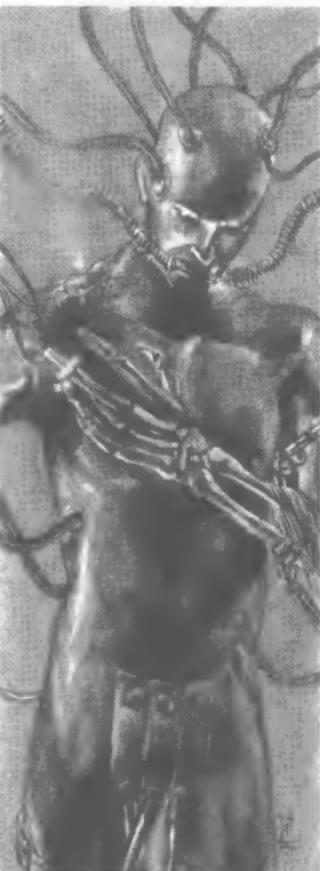
Proudhon looked very uncomfortable. I was about to tell him never mind, and he said, dully:

"When I first joined up, I was real eager, sir. You know, kill the Endies, and like that. I asked for training as a

missile gunner."

I hid surprise.

"They assigned me to a cruiser. The *Berkshire*, and we were in the lead attack group at the first battle.



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"I guess I was lucky, or maybe fast, but I was credited for taking out two Endarchy ships. One was a destroyer, the other some kind of supply ship."

"That's impressive."

Proudhon made a face. "Maybe it would be to me, if we hadn't caught a signal from that supply ship, just before we were ordered to pull out of the system.

"The ship was on fire, and whoever was on the com was screaming for help. But no one came. No one could help, not on our side, not on theirs."

"That wasn't a very nice way to die."

"There aren't many," I said, remembering what I'd seen of ships that became an inferno until the hull was breached.

"They gave me medals, but they didn't mean anything. I felt like I owed something. I dunno, sir, to who. But I made arrangements with a friend, and I won't say anything more, and got transferred off the *Berkshire* and sent to Graves Registration School, and then applied to come back here."

It was a strange, almost unbelievable story. But Proudhon's face showed the dull reflection of some kind of truth. I was a bit sorry I asked, made some polite comments, and went back to Mission headquarters.

I called up Proudhon's personnel file. It made no mention of Gunnery School, nor of an assignment to the *Berkshire*. I wasn't sure what I should do next, other than I was evidently dealing with somebody with serious problems. Then I looked more closely at Proudhon's fiche, realized something was very strange. The only military school it showed was the Graves Registration School. No basic training, and even stranger no home of record, no next of kin.

I showed Erdman the fiche, without saying anything about Proudhon's story.

"Somebody's doctored this one," she said instantly. "Look—there aren't even any basic test scores, which everybody takes. It's like someone made a quick copy of his file, without filling in all the entries."

"Could he have done it himself?"

"Not a chance," Erdman said. "There's a lot of people ... me included ... that would like a chance to get in and paddle around with the past. Those fiches have an anti-tampering code on them, so all you and I can do about some trooper here is list current items. Then, when she's transferred, Central Personnel codes our data, adds it to her fiche and transmits the file to the next duty station."

"I've never heard of anybody being able to mess with his file. And Lord knows I've known some sharpies."

After I dismissed her, I looked up, in our rather meager history section, an account of First Hara. There had been a *Berkshire*, a cruiser, in the battle. Evidently it survived, because there was no record of it being damaged or destroyed. However, the current *Janes* didn't list any ship with that name still in commission.

I do not like untidy ends. But I've learned enough, over the years, to not pull at them prematurely. Proudhon was doing his job, doing it well as far as I could see.

I put the matter in the back of my brain, moved on to other concerns.

Three E-weeks later, Erdman came to me.

"We've got a problem, sir. Specialist Klaus Proudhon."

I had the idea from her expression it wasn't going to be anything simple, like AWOL, or fighting, or public drunkenness. It wasn't.

Somebody had sent an anonymous posting to Erdman saying that Proudhon was a child abuser. Erdman had asked one of the two Criminal Investigators assigned to the Mission to investigate quietly, without making Proudhon aware of what was happening.

The CI man had come back with a report. Proudhon appeared to be living with a young girl, estimated 15 years of age. She was either a runaway, or a war orphan, since when she went from Proudhon's quarters into the nearby city, such as remained, she knew no one, went to no house, but bought certain foodstuffs, occasionally a piece of clothing, came back to the field. The investigator tried to draw her into conversation, had not been very successful.

There were plenty runaways and orphans on Safehome in those days, and the civil government was overburdened trying to take care of them, especially with their root attitude that anyone who was poor or needy had done something to deserve it.

I grunted, asked Erdman the age of consent, hoping that was an easy way out. I was told it was the standard eighteen years, which didn't help. I asked if she'd tried to find out who'd sent the posting. She had, and had failed. All she knew was that it came from within the Mission. I asked about Proudhon's friends or enemies. He seemed to have none.

"Is there anything negative in his job performance that should be taken into account in whatever decision we reach?"

"None, sir. I talked to the salvage section people, and Proudhon goes anywhere to retrieve bodies, not just space. He's brought back bodies ... sometimes just fragments of bone ... from ships that went down in the jungle, even some fliers who got out on a dropper before their ships crashed and died trying to walk out. They say he's got some kind of understanding with those, what do they call them, Barbars, back in the jungle."

"Plus he keeps talking about, once Hara is cleaned up ... his words ... about trying to put together a section so he can start recovering bodies over in the Loki System."

"He's damned near a perfect soldier ... if doing what he's doing is part of soldiering."

"I guess ..." I started, and Erdman held up her hand.

"I'd like you to watch something first," she said. "I bugged myself, went to talk to Proudhon, trying to get a handle on what he is."

"I didn't get much ... and didn't see that girl ... but here's something I thought you might find interesting."

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She plugged a fiche into my computer, and I ran it.

Klaus Proudhon sat, looking uncomfortable, at the small desk in his shelter.

"Why did I volunteer for Graves Registration? I wish I didn't have to tell you, but ... well, I was in the First Battle of Hara.

"I was a com specialist, fresh out of training, on one of those little Fleet scout-boats. My flotilla had been ordered to recon the area around Hara. We did, and reported Endarchy elements massing.

"The first elements of our fleet came out of hyperspace, took battle formation. My boat's captain, who was senior officer of the flotilla, ordered us to withdraw and cover the fleet's flanks as they closed.

"Out of nowhere, we were hit by a formation ... there must have been ten, maybe more ... Endy destroyers.

"They cut through our scout boats like we were paper airplanes. I don't remember now if one, maybe two of our boats made it through the first attack. It wasn't that the destroyers gave a damn about us. They wanted the cruisers behind us.

"Anyway, my boat was hit, hit hard, and I came to, and my suit had self-sealed, and I was the only one still alive on the boat.

"I had to get out of there. I'd barely had any cross-training, but remembered a little and got to the controls, and the boat still answered to secondary drive. I hit the emergency controls, brought up the last two course changes, and we pulled back. All I wanted was to get away from those little killer flashes of light that were the Endarchy destroyers, and all of the blips behind them that was the rest of their fleet.

"I guess I was shouting something into the com, and I saw, on one screen, the other scouts pulling back with me.

"All of the Allies were green, and I guess that attack by the destroyers, and my fleeing ... well, the whole first wave broke, and I heard calls of *sauve que peut*, save what you can, and our Fleet was a mess, some ships still trying to get in and fight, others in blind panic.

"That's the real reason, ma'am, we lost the battle, although none of the histories mention it."

Erdman's puzzled voice came over:

"I still don't understand why that made you volunteer for GRU."

Proudhon looked a little exasperated.

"Ma'am, I think it's obvious. I was responsible for a lot of deaths that day. I *ran*, dammit! Sorry, ma'am. I should've ... I don't know what I should've done. Maybe see if the missile stations were still active, and try a launch at one of the destroyers.

"I don't know. I don't know.

"They wanted to give me a medal, but I refused it. All I wanted to do was somehow do what I guess they call penance, and the best way I could think of was somehow come back here, and help bring out the bodies of the people who'd died, who they'd not been able to recover.

"Anyway, that's why I'm here, why I'm doing what I'm doing," he said, the words almost buried.

Erdman hit the cut switch.

"There's nothing else on the fiche worth watching."

"Interesting," I said.

"Yeah," Erdman said. "I know something as gawdawful as what that poor kid had happen to him could get to you, and the stupid way he's blaming himself for it doesn't make any sense ... but ..."

His voice trailed off.

"You did a good job, Captain," I said. "I think I'd better handle the matter from here."

Visibly relieved, she saluted, left.

But three days later, I still hadn't done anything, had no idea what I should do, especially since there'd been no repeat of the accusation.

And then the shuttle crashed. It was a ten-passenger atmosphere transport that traveled back and forth between Safehome's capital and its secondary city of Helf, supplying a small Mission detachment in that city. Its pilots had been ordered to always follow the old ground vehicle road that had been through a mountain pass, since flight conditions over the jungle were so unpredictable.

Evidently the long way around no longer appealed, and the shuttle got in the habit of cutting straight over the peaks, even when flight conditions were marginal.

Then the transport failed to report, with a full load. No one was able to make contact, and the hours dragged past. By dusk, it was obvious the ship was down.

I immediately ordered both of the two scout ships assigned airborne, and to look for the crash from high altitude. They found nothing, but searched all that night. Another search at daylight also produced nothing—the mountains were hung with mist, and storms lashed their peaks.

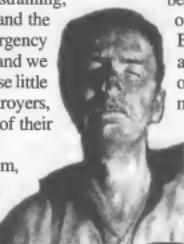
"Not the first, nor the last I've seen lost like that," Erdman said gloomily. "Pilots get lazy, take a flight plan they've done again and again for granted, and suddenly there's a damned concrete cloud in front of them."

I had an idea.

"Didn't you say something about our disgraced corpsrunner being able to find ships that went down in the jungle?"

"Right, sir," Erdman said. "I'll track him down, from wherever he is, get him inbound, and put him out, as soon as the weather breaks. Hell, maybe he can see some sign of where they augered in."

But Proudhon didn't respond to the com. I assumed he was on Hara Two or Four in his endless searching. I told Erdman to keep trying. As the hours passed, it became less and less an immediate emergency. There was little likelihood there were any survivors.



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An hour after dawn the next day, while I was shaving, wondering if it was possible to hire Barbars to search the jungle, following the track the transport must have taken over the mountains, Erdman arrived at the half-shattered villa that was my quarters.

"Sir. We've found the wreckage."

"How?"

"Specialist Proudhon just commed. He's inbound from an area near Mount Phaxis ... that's about where we figure the lifter would have gone in ... with nine bodies."

"And one survivor," she said. "Although he's broken up pretty bad."

"I'll be dipped," I said. "Get the emergency wagons to the field."

"Already there, sir. And I've got a lifter waiting outside for us."

Proudhon's black scout came in for a landing about half an hour later. The medics pushed the ship as the lock opened and Proudhon came out.

"There's no hurry," he said mournfully. "The last man died just before we saw the field."

He came away from the ship as the medics went in, saw me, and saluted.

"Congratulations, Specialist."

Proudhon shook his head.

"Nossir. I won't accept them. Maybe if I'd been able to get to the wreck an hour, two hours earlier, that woman, and maybe one other man, would still be alive."

"I guess God only lets me have one trade."

"Still," Erdman said. "That's better than leaving the bodies out there, no one knowing."

Proudhon looked at her curiously.

"Yes," he said, sounding unconvinced. "I suppose it is."

"Proudhon," I said. "Don't rain on your own parade, man. That was well done. I wish you would've notified Salvage or Mission Headquarters of your intent."

"Oh," he said, vaguely. "I guess I didn't think."

He looked at me.

"Is there anything else? I'd like to get my ship cleaned up."

"No," I said. "No, that's all."

Later that day, Erdman, four of my MP's in dress uniform and I went to Proudhon's shelter.

He came out as our lifter grounded, saluted. The MP's hit the ground, he looked alarmed, then puzzled as they came to rigid attention.

"Specialist Klaus Proudhon," I said. "Because of your outstanding performance, I have authorized the award of the Legion of Merit."

I took the medal case from my pocket, opened it, and pinned the medal on Proudhon's flight suit.

He looked at it, hypothesized.

"There'll be a formal presentation and reading of the award at The Mission's Full Assembly, at the end of the week."

"Congratulations again," I said, sticking out my hand. He shook it rather limply, released it, kept staring at the medal.

"Thank you ... sir," he said finally.

"That's all, man," I said.

"Thank you, sir," he said again, remembered a salute, turned away without ceremony, went back in his shelter.

The MP's and Erdman looked at me a little bewilderedly. I shrugged, ordered everyone back to the lifter.

As I followed them, I noticed a smell. Or, rather, two smells. One was that possibly imagined stink of death.

The other was a woman's perfume, very faint.

A woman, or a young girl.

The Criminal Investigator who'd been put on Proudhon's case asked to speak privately.

"I've two, actually three things for you, sir. The first is that I've confirmed Klaus Proudhon is having an illicit relationship with an underage female. I also have found out who she is."

He told me the girl's name, which doesn't matter now, confirmed her age.

"She's a Risto, sir. Or, rather, her parents were." He named the political post her mother had held, the business position of her father.

"They were killed in one of our bombings, sir, and she's the only surviving member of the family, unless there's someone on another world. Her estate's valued at well over three million credits, and that's a minimum estimate."

"She was, and a lot of this is just rumors, something of a wild child, and her parents had trouble keeping her at home. She was away when their house was bombed, and that seems to have had an effect on her."

"She still lives ... or, rather, lived, in the ruins of the house, in the lower story, where there's a bedroom with a roof and one of the servants' kitchens. She won't go to school, or see anyone, not even her friends from before."

He told me the location of the family mansion, and I remembered overflying the gloomy, shattered ruin.

"How she met Proudhon, nobody knows, any more than they know exactly what's going on between the two of them. I managed to get her family's banker to tell me a little, and she hasn't drawn any funds for two E-months."

The investigator looked terribly perplexed.

"I didn't want to put Proudhon under charges until I got orders from you. And ... and, well, there's something else, sir."

"Do you know anything about why Proudhon's doing what he's doing? There's a story there, sir."

I was about to say I knew it ... knew both of them, then caught myself.

"Go ahead, Warrant," I said.

"It's real eerie, sir, and real sad. He comes from a wealthy family, back on one of Vega's worlds. He's the younger brother, and his older brother was like a god to him. Proudhon said his brother did everything perfectly, and Proudhon always thought he himself was a shambling idiot ... that's exactly his words, sir ... next to him."

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"The war came, and the brother enlisted, and they made him an officer, and a pilot. He did really well in the war's early days, and they made him an admiral's aide.

"Proudhon said he'd never been so proud in all his life when he heard it.

"The admiral was one of the commanders in the First Battle of Hara, and was moving from ship to ship during the fighting. Sometime during the battle the ship the admiral was on got hit, and the admiral and Proudhon's brother were killed.

"Their bodies were never recovered, Proudhon said, and, in fact, which particular ship they were on when they died isn't known, either.

"Proudhon joined up as soon as he heard, and is determined that he's going to find his brother's body and see that the ashes are returned to his family.

"He said he spent quite a bit of his inheritance making sure he got trained as a Graves Registration Specialist, and also assigned to Hara."

"You believe him?"

"Sir," the investigator said firmly, "I've been a copper for almost 30 years, in and out of the service. I think I can tell pretty well when somebody's lying to me. At least about the big lies, since, Allah knows, we all tell little ones.

"Yessir. He's telling the truth, sir."

He looked at me rather plaintively.

"What do you want me to do next, sir?"

I shook my head, told him to go back to his normal duties after sealing the file and giving it to Erdman.

He left, looking quite relieved.

I was even more sorely troubled than before.

But again, I put the matter off.

Two nights later, the MP's reported a disturbance at the landing field, near Proudhon's quarters and crematorium.

A naked woman, a girl, had been seen, dancing around a bonfire, while an equally naked man played on one of the Barbar's wooden flutes.

When the MPs responded, there was no one to be seen, nothing but the dying fire. They went to the ship, the crematorium, the shelter, but no one responded to their shouts.

Now I had to do something, and decided I'd have a formal investigation begin the next day.

But Klaus Proudhon moved first.

Just at dawn, the field control tower reported his ship had taken off, without filing a flight plan or requesting clearance. His ship was tracked out-atmosphere, then lost.

A secondary field reported, an hour later, an unidentified object entering atmosphere that failed to respond to any challenge. It dove below the radar horizon, disappeared.

The rest was silence.

I left the Mission three years later, just after the peace treaty with the Endarchy was signed, for a position as a civilian

researcher with the Fleet History Division, where I remain, twenty years later.

During that time, I've made the fullest inquiries about Klaus Proudhon.

Strangely, the main Allied personnel rosters show two men of that name, both of whom survive, both of whom I've interviewed. Neither of them saw combat, let alone came anywhere near the Hara System.

The only admiral killed at First Hara was on a ship that successfully withdrew, heavily damaged, from the debacle. That admiral was notorious for hating to be surrounded by aides, had none at all assigned to him during the battle.

I have not been able to find any personnel records of the *Berkshire*. It was withdrawn from service after First Hara and scrapped as obsolete. Its personnel records have vanished.

I have interviewed the handful of scout boat survivors who were at First Hara. Unanimously, they say there was no destroyer counterattack against the first scout elements and, as battle was joined, the scouts pulled back, through the Allied destroyer screen, as they'd been commanded, in good order.

On Safehome, the fortune of that girl, whose name I still will not release, has never been touched.

No one matching her description, nor for that matter of Klaus Proudhon, has ever been reported anywhere on the planet, nor on the other two inhabited worlds of Hara.

What happened to Klaus Proudhon?

Did he make his way to another, populated system and vanish? His ship had more than enough fuel to reach any of several Allied worlds, although there are no reports of a strange black ship arriving from nowhere within the proper time frame that I've been able to find.

Did he move into the Loki System, still looking for whatever chimera drove him, living on supplies taken from wrecked ships?

Was that intruder his ship, returning to Safehome and landing amid the Barbars, who are still as hostile to civilization as ever?

Did he and his lover join them?

And who was Klaus Proudhon?

A ghost from the terrible shatter o' the three battles?

I mention this last out of complete hopelessness, for I do not believe in ghosts.

I do not know anything.

Not anything at all.





Dear John

by Sarah A. Hoyt

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The night was cool. A soft breeze blew from the ocean, bringing with it a taste of salt and a feel of humidity.

The humidity clung to my platinum blonde hair, making it sticky and messing the lustrous waves that took so long to arrange. Good thing the beauty mark on my face wasn't painted on; good thing my makeup was permanent and couldn't blur.

I smiled, and walked back and forth along the cracked sidewalk. Smile, smile, wiggle of hips, smile, smile, I looked adoringly at the glide cars passing by, silently, their drivers hiding behind the safe anonymity of darkened windows.

Click, click, click, my high-heels beating a rhythmic, monotonous sound against the pavement. Click, click, click.

My ankles hurt, as did my feet, from their unnatural position.

Zoom, zoom, zoom, the cars gliding by, one after the other, all featureless ovoids in different colors, like someone had raided a giant Easter egg basket and sped each of the eggs out on the highway. Now and then, an egg stopped, the shell opened, and a John came out.

Just what every little girl wanted for Easter.

I've never seen an Easter basket. But I remembered the twentieth century vids and educational material that they'd made me watch in the creche: Easter with the eggs, and Christmas with trees and lights. It must have been some time to live in, the early twentieth century.

For all I knew, so was the second. Surely the Johns in those Easter-egg cars seemed to be having a blast. They talked of colonies on Mars, of a robotics revolution, of life spans extended to twice what they were twenty years ago.

But it didn't matter to me. My life span was the same I'd been created with, and my life was this: click, click, click of heels across the pavement, back and forth, ignoring the other Marilyns. And the Racquels and the Elizabeths and all the others. Time to socialize with them at the dorm after work. Not now. Now it was time to smile, smile, smile and look sexy.

Now and then a John would stop and approach one of us, and extend his credgem, like a little clear marble, for approval. And then, if the authenticators disguised as golden bracelets on our wrists clicked their approval, then one of us would take the John to the office, and do what we'd been so well trained to do.

They'd trained us never to act tired, never to act bored. To take our clothes off. To take the Johns' clothes off. To exclaim over their bodies, their big muscles, their all-male square shoulders—even if we saw none of those.

They trained us to lay down in the prepared bed—sanitized for your protection—and spread wide, as they bumped and ground.

They taught us to smile, smile, smile.

Sometimes the Johns wanted to talk to me as if I were her. The other. The Marilyn.

I indulged them and prattled about my films, my love life. How Joe jilted me and Jack did me wrong and how no one ever understood my artistic soul. Until this John.

Then the John would leave, and I used the cleaning spray down there—sanitized for your protection—and it was back to walking outside on the sidewalk.

"Hello," he said.

He stood five steps away from me, and there was no parked car in sight. Just this man, over six feet tall, with light brown curls and sparkling blue eyes and a disarming smile.

I smiled back, as I'd been taught to do, and practiced for so many hours in front of the mirror, making my lips just so, so that the Johns would find them irresistible.

"Well, hello there," I drawled, in my sexiest, breathiest voice.

He looked away, at the stream of cars, zooming by, then back at me, his smile not dimmed, but managing somehow to give the impression of shyness. "I was wondering," he says. "How much it would be for an hour."

I couldn't place his accent, which was strange enough, considering how many people I got through here everyday. "Thirty cred units for an hour," I said. "Sixty for the whole night." Hardly worth it now, with the night half gone. But I still had to say it, with the big smile, and the slight wiggle of the hips.

He grimaced. "Not tonight. I don't have sixty. I'll see next time. Tonight it will have to be thirty." He handed me the credgem, an unembossed, clear one.

I popped it into the authenticator—the oval attachment dangling from what looked like a heavy gold bracelet on my wrist. I smiled while I waited.

He wore a well-cut suit, with an odd design, like the ones they wore in all those twentieth century vids that they'd made me watch in the creche. It was black and emphasized his square shoulders, his narrow waist. But the cut was strange. It had to be a revival thing.

He smiled back at me as if he, too, had been to the creche and practiced, a smile that would make your insides melt.

The gem cleared, and emptied. Thirty cred units was all he had.

I looked at him, surprised, because after all, a man like that exuded money, the feel of never having had to do anything he didn't want to.

I led him to the offices, a block away, in a tall, grey tower, put up expressly for the purpose. Inside were cubicles, barely large enough to accommodate a large, comfortable bed, its sheets pulled back invitingly, and a broad band set across the

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white linen. The band said *sanitized for your protection* and was put there by the robots who cleaned the room afterwards.

He laughed at it; laughed, laughed as if he'd never been to a doxy room before, never seen anything like that.

He undresses himself, with an impatient eagerness that gives me no time to do more than react—to his broad shoulders, his narrow waist, his golden skin.

Then he undresses me, and he takes his time: he takes his time to explore my skin, my heavy breasts, my curvaceous legs. He tastes, touches all of it, before bringing me down to the bed with him, before laying between my legs, before shouting with joy above me.

"What's your name?" I asked him, as he pulled his underwear and pants back on and fastened the buttons of his retro shirt.

I'd never asked them that. One doesn't. But this time had been different, different in a way I couldn't even say.

He looked at me, his eyes veiled and blue and mysterious, like the midnight sky over the ancient sea. "John," he said.

I should have known. They all were John.

After the shift, when I slid into my mercifully solitary bed in the dorm, I dreamed of John, John, with his broad shoulders, his golden brown hair, his blue eyes.

Why would a man like that go to a doxy?

For the dream, I supposed, the dream that I was her, the illusion of making love to a twentieth century sex goddess.

But he'd never asked. He'd never asked about them.

The next night was cooler, the breeze from the sea heavier, nearer a gale.

Fewer cars glided by.

The other Marilyns and I—all twenty of us who worked this street—walked back and forth smiling, smiling, but not a car stopped for the first two hours.

I was jealous of the Marilyn who stood on the little square grate on the pavement, the warm air blowing from the grate blowing up her skirt while she pretended to try to hold it down and laughed. At least my legs would have been warm.

But that was not my beat, so I walked back and forth, wiggle, wiggle, click, click.

"Hello?" He stood a few steps away from me, as if he'd followed me from behind, for a while.

"Oh. Hi there," I said, and smiled. "John, isn't it?"

He nodded, and grinned, really big, and handed me the gem. There were sixty cred units in there, and I could have kissed him, and cried with relief, because he was taking me off the streets for the night.

He undresses me slowly; he undresses teasingly.

We explore each other's body as though we're unwrapping Christmas gifts like the children in those vids at the creche, savoring the suspense as much as the discovery of what's really inside.

And then we make love, slowly, slowly. We make love. Not screw and grunt, not pump and jerk. Love. Slow. In every permutation.

"I was hoping you'd get me again," I said, as I leaned on his broad, sweat-slick shoulder, and smelled the scent of worn-out male, the scent of love making thick in the air.

He looked up at me, his eyebrows drawn together in confusion.

"Me and not one of the other Marilyns," I said, nuzzling his neck, at the edge where the soft skin became rough with closely shaven beard.

He blinked. "I was looking for you"

For me. I'd dreamed of that, but it was nonsense. "You couldn't have been," I said. "We're all alike. All the Marilyns."

He grinned. "No, you're not. I know the way you walk, your expressions. That's learned. Not what you get from being someone's clone."

I raised my eyebrows at him. No one who hadn't worked with clones knew we were different from each other at all. Or different from the originals. "You know a lot about clones. What are you? A genetic engineer at one of the fancy labs around here?"

He laughed. He laughed a long time, and then had trouble recovering his breath. When he did, he said, "No. No. I'm just visiting town. I'm not from around here."

Afterwards, I called myself several kinds of idiot. What genetic engineer would use a disposable credit gem with only what he must pay for a doxy service? Engineers were rolling in credits, had expense accounts on company credgems.

He didn't come back the next night, nor the next. It was just the regulars, the other Johns, who emerged from those egg-like multicolored cars, and bumped and ground by the hour.

Then one night, two months after, a dusty, travel-stained car stopped, near me, and as I turned, swaying my hips and smiling, he emerged.

"John," I said.

He smiled. "You remember me."

He had enough for the night.

We make love like castaways on an alien shore, who grasp each other in desperation. We cling and writhe in the sweaty bed, the sanitation band broken, the sheets wrinkled and thrown onto the floor in haphazard joy.

"Where did you go?" I asked him, laying spent beside his golden, sweaty body. "Where did you go?"

He laughed, a laughter that betrayed joy, not amusement. "Missed me, babe, did you?"

I nodded.

"I went . . . To other places. I'm . . . I lecture . . . In schools," he said.

I thought that explained the retro suit. And I didn't say anything. Later in the night, though, he asked me how old I was.

"Twelve," I said. "Seven years out of the creche, two years to go."

He looked grave, serious. "How do they do it?" he asked. "How do they do it, when they choose to end you?"

Dear John

"When senescence sets in, they give us a lethal injection," I said. "It saves us the pain of aging and the troubles of old age." Straight out of the book from the creche.

"Bullshit," he said. "Bullshit. It saves them the trouble of feeding you, of looking after you in your old age. You make them all the money they want, and then they just put you down, when your tissues start degenerating, as the tissues of clones will."

I looked at him, surprised. Humans don't usually care that much.

He took a deep breath. He looked like a drowning man. "I am fourteen," he said. "They put us to death by shooting us. By recreating his assassination. Big-to-do in Dallas. Every year."

His features fall into place with an almost physical sound, an almost physical pain. That's who he is, I think, Jack.

I blinked at him.

"Just another clone, you're right," he said. "Just another clone." "But . . ." I said. "The credjems, the car . . ."

He grins. "I take them. I figured out how to glitch the system long ago. We sleep in these temporary buildings, while we're touring, and I have figured out how to tamper with the alarm. How to tamper with the computer, too, so that the sensors on my bed tell them I'm still there."

"But . . ." I said. What company would put up with it? They paid big money for the tissues of the people they cloned. Probably a lot bigger money for his than for mine. They would have to get their money's worth, right?

He shrugged. "I've heard them talk once. They say it's in the baseline personality that I'll break the rules. So they have to put up with it." His eyes filled with tears, as he turned to me—his eyes like the sea rising. "Do you still want me? Do you still want me now that you know what I am?"

I shrugged. "You're nothing I'm not." I buried my face in his hair and nibbled at his ear.

He sighed. "I don't have much time," he said. "I don't know if we'll come back to L.A. again. Another month, at most, and then they'll put me down. Before I show signs of aging."

He tells me he read about them, Marilyn and Jack. He, the original, went by Jack, which is why John calls himself John. Or Johnny.

Like me, he doesn't know if it's true or not, about the originals, if they ever got together. But my Johnny is alone. He was the only one cloned of all of Jack's family. He didn't even have clone-twins. Jack is cloned at the rate of one a year. They move through the creche system, through their appearances—one at a time, one succeeding the other. And he needed something, some human anchor.

He chose me because I looked older than the others.

He says there's a difference in the walk, a difference in the oh-so-practiced smile.

He tells me loves me.

"You don't need to go back," I said. It was close to dawn and we'd had sex countless times. Now we lay together in each other's arms. "You don't need to go back. You've stolen the car. We should run. My clients tell me there are still wilderness areas. We could get lost in one of those. No one would ever find

us there. No one would. They wouldn't even look. Too expensive for two models near the end of their cycle."

"They get a lot of money from the to-do in Dallas," he said. He pulled gently away from me and sat at the edge of the bed, putting his shirt and pants on. "Lots of nuts get to dress up and re-enact it all—to be assassins and policemen. I read about it. I cracked their system. The other one, the younger one of me is ready to leave the creche."

He put his cuff links on. Cuff links. I'd only seen them in vids before. But for some reason, those little pieces of jewelry look incredibly sexy, very masculine. The embodiment of a by-gone era. He snapped them on, without looking, like he did that every day.

He probably did.

"Besides," he said. "The sensor I rigged will tell them if I'm gone after dawn. I couldn't rig it that far. They know my proclivities, and they work around them. And you'll be missed."

I looked at the dot on my finger. The dot indicated how many hours I had left on my shift. It pulsed, one, two. One, two. "We have two hours. I won't be missed for two hours. We could get lost in some wilderness in two hours. I know we could. There's a place called Death Valley. I'd rather die there, than you dying somewhere without me."

He laughs, and takes me in his arms, and twirls me around and around the small space in the room. "Let's. Let's. Life is short, and I'm tired of doing what I have to do. Let's. It might be doomed, but it's worth a try."

A try was all we got. They spotted us by the ID box of the car, before we even flew out of L.A.

They seemed to think our attempt was very funny.

They took Johnny with them, took me back to the offices and the dorms. They put an ankle marker on me that will tell them if I leave the part of the street assigned to me.

Every night I walk, and I smile, and I wave. Last week, I asked a client about the thing in Dallas—and he showed me the whole show on his pocket newsy.

Bullets tearing into the golden flesh, ripping into the soft brown curls.

It hurt me, as if they'd ripped into my heart, but I forced myself to watch it all, to watch it to the end.

I could run again, force them to kill me. But what's there to run to? Soon my own end will come, in less than two years. There will be the cold bite of the injection on my arm, and then nothing.

The church people say my kind have no souls.

Life is short, and then you die.

But for a couple of months I was alive. For a couple of months I had my dear John.

Johnny, Johnny, I hardly knew you.





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Forgotten Causes

John C. Wright, Esq.

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I woke up to a beautiful woman's voice whispering directly into my ear: "We are now in a secure mission posture. All information hereafter will be on a need-to-know basis."

I was in zero gravity, warm, comfortable, floating. No doubt I was back aboard the Ship, safe at the perihelion of some wide elliptic orbit, nice and far, far away from the deadly danger of the Suspects....

Wait. What Suspects? Who were they? And...

And who exactly was I again? I seemed to have misplaced my name.

Furthermore, there was an irksome pain in my arm, a stabbing pain, as if the inravenous needle built into the elbow-joint of my armor had missed the vein.

Funny. Why would I be wearing my full kit heavy battle-armor if I were back asleep in my little brain-womb aboard the Ship?

I pried an eye open and saw a grand, stately movement of blue and white swirls slowly passing across my face plate-screen. To one side, as I rotated, was a pretty flower-shape of blazing red with arms of floating black.

It took me a moment to focus. Blue ocean. White clouds. Flaming wreckage formed an expanding cloud out from me. Smoking shards of hull-ceramic spun giddy trails of smoke. No. Not 'out from' me. Up. I was in an atmosphere. A planet. I was at least a thousand feet up. And I was in free-fall only because I was freely falling.

Hey—Was that my landing craft that just got shot down?

My limbs jerked, trying to grab something. But nothing moved. A coffin would be roomy compared to power-armor with the power off. Imagine having a ton of composite alloy wrapped skin-tight around each limb. I was trapped.

"Where the hell am I? Who am I?"

A beautiful woman's voice, like the voice of an angel. It was the Ship. "I'm sorry, but you are not cleared to know that at the present time. The mission has assumed a secure posture and all information hereafter will be on a need-to-know basis...."

A good marine probably would have just said, ma'am yes ma'am! Ready to splatter! Wilco! But I just screamed and swore a blue streak.

She said: "You are apparently fully conscious. I am returning battle-suit control to you."

Now my limbs moved. Joint motors amplified my panicky flailing so that I began to roll and tumble. Reflexes took over. I spread my arms and triggered altitude jets. And kicked the switch with my chin to snap the airsickness bag over my mouth. I had to remember to thank the Designer back on Earth for that one.

If I could remember who the hell the Designer was. And why did a sensation of cold desolation creep up my spine at that thought?

The Ship's lovely voice: "Attention. You have three targets approaching mach 4.1 north-north east. No confirmation exists that these are hostile forces...."

With a shock, light exploded into my eyes. No. Not my eyes. It only seemed that way. There were a dozen pinpoint cameras dotting the hull of my battle-suit; the information from all those points of view were flooding directly into my visual cortex.

"...You may fire in your own self-defense if you or your mission are threatened. Avoid collateral damage where possible...."

There were dozen more cameras and reader-heads, in the noses of little micro-rocket remotes which were fanning out from the wreckage of my downed lander. Think it's hard to integrate the viewpoint of two eyes into proper perspective? Try doing it with a two dozen.

"...You are not, I say again, not required to commit suicide to avoid capture...."

I could see the radio-noise and thermal exhaust radiating from the bodies approaching. They had hard radar-reflective surfaces. The favorite object a marine ever sees: Big, hot, slow, and made of metal.

"...The amnesia drug has removed those memories tagged with security neuro-linkages from your brain...."

I directed (how? just by wishing it, like pointing a finger) two of my remotes at each target, to get overlapping fields of fire, and I set their idiot-brains on DefCon two, which is, shoot if they change energy levels, alter course, or open fire. Then I sent two more remotes toward the group at high-speed, instruments cranked over to high-sensitivity, active scan, double-readings. Were the incoming bodies armed?

"...You may cooperate with your captors in any way which does not endanger the mission."

My brain had been tampered with. No one can interpret visual images from twenty viewpoints on twenty bands of the spectrum, infrared, IR, UV, radar, magnetic anomaly. What else had been done to me...? What else had the Designer done to me...?

(Just the word made me recoil slightly. I wondered then whether the Designer was an It, not a He or a She.)

But I didn't let the prospect of imminent death in battle distract me.

"Ship! Am I going to be rescued, damn you? Where are the other members of my...?" I was going to say 'my squad' or 'my unit' or something. But I stopped. The words sounded wrong.

Absolute Magnitude

Loneliness. Terrible loneliness rose like bile in my throat. I knew what she was about to say before she said it.

She said: "There are no other human beings."

That sentence seemed to hang in my ears for a moment, echoing.

The lead incoming aerospace craft (old-fashioned, using a ram-jet and rocket combination for low-troposphere to high-atmosphere theater) blossomed with heat in the armpits of its stubby triangular wings, and fired two beam-guided missiles in my direction.

"What's my mission?"

"I am not certain if you are cleared to know that. Please stand by while I consult instruction scenarios. . . ."

My remotes had already sliced the lead enemy craft from stem to stern, and issued an electromagnetic pulse powerful enough to scramble any avionics and sterilize any unshielded men aboard. The other two remotes were beeping plaintively for instructions; their simple-minded threat-response software couldn't decide if the other two craft were 'part of' the first craft's attack.

I toggled them over to DefCon One (which is, shoot if they sneeze.)

My altimeter alarm went off. I had been deceived by my Earthly instincts. The globe was smaller than Earth; the horizon closer; and the surface was a hell of a lot closer than I thought.

The helmet monitor lit up: Deploy chute? Yes/No.

"Damn you, Ship! You told me not to do anything to endanger the mission! To carry out that order, you've got to tell me what the mission is—"

The craft on the left sneezed. Remotes three and four blotted it out. A smear of oily flame and radioactive debris unrolled across the sky.

"Your mission parameters are: Determine if the suspect world is responsible for the destruction of the surface biosphere of Earth. If so, execute suspect world, regardless of civilian collateral damage."

My mind went blank. Earth dead?

In that stunned blankness, one little thought asked plaintively: Who would do it? Who would or could launch an attack to a target light-years away? An attack that would not arrive till their great-grandchildren had died of old age? It was insane. . . .

There could not be that many suspect worlds. Multi-generation colony-ships were very big and very expensive and very slow. And it was very, very hard to find volunteers. Besides, within a thousand light-years of Earth, only six planets were capable of sustaining human life.

And evidently I was falling toward one of them.

Her voice continued: "If not, determine if suspect world has any weapons or weapons technology capable of large-scale interstellar attacks. Disarm suspect world. Use any means necessary. Inform the population of the Law."

"The Law. . . ?"

But I knew the Law. Thou shalt not: kill worlds.

The third incoming aerospace craft wasn't what it seemed. When it flinched, the particles beams from my remotes bounced off its inner hull, which was made of something a damn sight tougher than the phony outer hull; and then it swatted half my remotes out of the sky with a sweep of hard radiation.

The nose tilted up till the craft was vertical. The stubby wings fell off; a column of white light and white noise erupted out of the engines. My neutrino counter ran up to five digits 99999! and burned out. Whatever the hell they were burning wasn't old-fashioned chemical rockets.

I could see, on higher wavelengths, beams like searchlights drop down in sync with the tight-beam shining from the radio-laser horn of my helmet. The beam pointed up. The super-rocket or hell-craft or whatever it was shot straight up. Same direction. My remotes didn't have a chance of keeping pace.

And remember those two big, dumb slow rockets coming for me? They suddenly got a lot faster, and they peeled open into segments almost as small and alr ost as hard to see as my remotes.

An automatic circuit in my battle-suit began jinking me back and forth with random bursts from my retros. Yanked up, jerked left, swatted right, knocked spinning. Instantly, I was one huge bruise across my whole body. This was supposed to keep me safe?

My counter-electronics flashed. Screaming little super-missiles flashed to my left and right, missing the target, or got tricked into exploding early.

Deploy chute? Yes/No. (WARNING Chute cannot deploy while retros are firing.)

"Ship! Ship! What the hell do I . . ."

A man's voice, in a language which I somehow knew, broke in: "Terran! The Military Arm of the Averian Collective requires your immediate surrender!"

What the hell? Were they asking me to surrender? Me!!!

I decided then and there that I knew one thing about myself. I didn't give up.

The Ship: "This channel is compromised. Do not break radio silence. Out."

It was true. They were tracing my communication beam. The hell-craft had climbed almost out of the range even of my godlike sight. It was headed to som: spot in low orbit, the source of the lovely female voice which was my only link with my life. Whoever the hell I was.

The man's voice was still talking to me: "Shut down your active systems! Let your energetic and nucleonic radiations drop to equal background readings to display submission! This is a necessary ordinance!"

The on-board computer in my suit flashed good news: Enemy signal protocols algorithm solved. Engage signal falsification routine? Yes/No.

And bad news: WARNING Below safe descent ceiling. Initiate emergency crash-landing procedures? Yes/No.

Forgotten Causes

(Yanked left, jerked up, swatted down-left, knocked right.)

They must have done something to my brain. I was able to see what no one could see; I was able to know things I knew I didn't know. I saw that fast little super-missiles mugging me were being guided by beams pointing at me from some distant source. (And I knew that the guide-beams were coming from six kilometers away, a large metallic craft 50 meters below the ocean surface.)

And when I wondered if my suit could impersonate those guide-beams and point those fast little bastards at some better targets . . . (For example, at the disappearing hell-craft up above closing in on my siren-voiced Ship. Or at the source of the beam-guides themselves. Or toward the source of the irksome voice asking me to surrender. Or at all three . . .) I wondered; I knew; I willed it.

It happened.

And the nasty little super-rockets, now my toys, flipped 180 and screamed away. Fast enough, maybe, to get the hell-craft.

Then, it all happened at once:

Man's Voice: "...willing to recognize your absurd claim to be the Terran emissary, Marshall Lamech . . ." (Lamech! My name was Lamech!) "...and extend you grant of ambassadorial immunity, if only you will stop these brutal and unprovoked attacks on Avernum and her satellites . . ."

Unprovoked? My lander was shot down! (Had my lander been firing? I had a dim memory of a streamlined dart of a machine, every forward surface studded with weapon-tubes, launch-ports, deflection and evasion arrays.)

Deploy Chute? Yes/No. WARNING You are below safe descent threshold.

Ambassador? Did he just call me an Ambassador? (And I thought they arrived in limousines, not in Armored Assault Re-Entry Vehicles.)

WARNING Incoming particle beam weapon from submarine source. Outer ablative material breached. Return Fire? Yes/No.

And then roaring, fire, pain, light, noise, confusion.

And then darkness. I don't remember what happened then.

I sn't it funny how you dream in black and white?

In the first part of the dream, I was sinking, sinking, numb with shock, all my bones were broken, and my helmet was filling up with blood.

. In the second part of the nightmare, I was crawling along the ocean bottom, along the muddy floor of some sea-trench sunlight never reached, and slow clouds of murk swirled between the fingers of my gauntlets as I moved. Lamp-eyed transparent fish and blind insects swarmed in my face, attracted to my helmet-lights.

I screamed each time I moved, because it wasn't me moving. The joint-motors of my power-armor were running on automatic. Pull right arm; drag left knee. Pull left arm; drag right knee. Every time my limp limbs were yanked by the

metal sleeves through the movements of that painful crawl, I could feel the jagged bone-ends grinding together inside me.

And then some huge armored machine, like a bathysphere on treads, rose up from the mud and gloom and speared me with a spotlight. A manipulator-claw reached out . . .

The third part of the nightmare was worst of all. I was strapped to some sort of morgue-slab or inquisition rack or something, and some sort of torture surgeons, faceless shapes in gray, were tearing off my skin, flaying me alive. Except it wasn't my skin they were tearing off, but my armor, prying me like an oyster out of its shell.

Days or years of pain went by; the room changed size and color once or twice, or maybe I was moved. Then, voices I could somehow understand:

"Officer-surgeon of the Collective! Observe here. Neural actions. The Envoy Lamech is awake—!"

"Illogical. Cortex tissues were destroyed with a number-five laser-scalpel. Nervous tissue does not regenerate."

"Yet, see, Luminous One!"

My eyes were open. Some sort of instrument clamped around my eyelids kept my eyeballs moist with drops of mist. Nice of them.

"Them" consisted of gaunt, tall figures in gray airtight suits, with faceplates of mirror-white. A battery of blinding lights, like a nest of snakes, coiled from the overhead, and writhed to peer across their shoulders, turning as they turned, pointing lamps whatever direction the figures glanced. The one on the left had a set of cables and medical appliances, clamps and probes and scalpels, growing in place of his right arm.

The other one—evidently a superior officer—was speaking. "Recall that our ancestors were modified to survive this planet, and modified again to serve the Collective. He is not Homo Sapiens Superior Eugenicus. He is merely a Human Being. Some quirk in his atavistic neuro-chemistry might account for these readings."

"Yet, ponder, Sagacious One, how long ago our ancestors set out from the Once-Home-World, and how slow the giant ships! The science of Earth may have grown in one hundred centuries! He could be infested with nanomachines, bodies in his cell fluid too small for our instruments to detect, programmed to repair his tissues. Even brain tissue."

"Nanomachines are a myth. Earth is a myth. Dead tissues and dead worlds do not spring to life again!"

"Yet look at the readings, All-Imposing One! He stirs; his eyes track our movements! I implore you! Look! Look!"

"Hm. Even so, with all his weapons and armor removed—what can he do? We are safe."

"Sir! This is an Earthman!"

"Ah. Perhaps you are right, loyal one. Sign the death-warrant in my name, and note the time. Stun him with six hundred volts of neuro-suppresser. I will apply a lethal impulse directly into his skull."

So the guy on the right picked up something like a shiny pistol and leaned over me.

Absolute Magnitude

I raised my arm (I had to jerk—my hand was stuck for a moment) and took the pistol (funny how his fingers just came apart in my grip, like bags of jelly, like dry twigs) and pointed the business end at his head and pulled the trigger.

When his brains exploded all over me, they were yellow, gray and red. Bright red. And I thought you couldn't see colors in dreams.

I was distracted for a moment by my hand. My wrist was dangling with severed cables and broken chains thick enough to bind an elephant. I watched the broken chain-ends swinging idly. Did I do that...?

What the hell was I?

The other guy hit a switch or something before I could move. The snake-necked lamps ignited with a strange blaze of blinding energy. It felt like a sledge-hammer with a red hot head slamming home into my skull.

Out again. (Maybe that was good. If I had been awake, I would have been pretty miffed about being knocked unconscious every few minutes.)

Waking up was more fun the next time. I was floating again, nice and safe in zero-gee. In free-fall...

I shouted and grabbed for something to hang onto, some weapon to shoot. I got a handful of water and splashed myself in the face.

Blinking my eyes clear, I saw I was floating in a garden-pool. An inflatable pillow supported my head and shoulders. A white box—a medical servo of some sort—floating nearby, with intravenous tubes running to my throat and elbow, and wires attached to disks on my chest and head. Perhaps the pool-water had been salted with something to increase its buoyancy; or maybe the gravity here was lighter than standard.

A circle of fruit trees surrounded the little pond, and terraced hedges of ferns and flowers rose up to my left and right. Beyond that was a wall. Above was not sky, but a ceiling of blue glass, crisscrossed with a trellis of lacy supports. This garden was in-doors.

I stood up, kicked aside the box, and yanked the needles and wires away with a sweep of my arm. It hurt, but it made me feel good. Maybe I don't like having machines to whom I haven't been properly introduced sticking their little things into me.

At first, I thought I heard the Ship's voice, beautiful and feminine. "We estimate the year on Earth, correcting for relativistic effects, to be AD 12705, the One Hundred Twenty Eighth Century. Are you aware of what that implies?"

It was my language. Or, at least, it sounded sort of familiar.

So I turned around, stark naked, with blue pool-water still dripping from my parts, and the loveliest woman I had ever seen or imagined was walking toward me. Floating toward me, it seemed like, since her step was as graceful as a ballerina's. She wore a dress of white, pinch-waisted to accent her figure, with an elegant long skirt swinging in counterpoint to the sway of her hips. Her hair was raven-black, her cheek-bones high,

her lips full and red, chin delicate. Her eyes were slanted and exotic, and as green as glass.

Her eyes held the clearest and most intelligent gaze I'd ever seen. On the other hand, they were, at the moment, the only pair of eyes I could ever remember seeing, so I guess I didn't have much of a basis of comparison.

A real marine would have engendered triplets on her on the spot. Me, I just stood there, dangling, wearing a dumb look on my face. Finally, I managed to say, "What the hell's going on?"

She smiled a half-smile, and looked at me sidelong. Did I mention how long and lush her lashes were? How green her eyes, like mirrors of emerald? "You mean, why are you still alive?" (A beautiful voice, soft and soprano, but not the voice of my Ship.)

I nodded. It did indeed seem to be a fine question, and one well worth pondering. Why the hell was I still alive?

"So tell me," I said.

A quiet smile graced her lips a moment. "We hope to reason with you. You have crossed six hundred and eight light-years from Sol; at least a thousand years have passed, Earth-time, since your launch. Whomever or whatever sent you out so far is long, long dead. Why continue this struggle? Whatever your reasons—and I'm quite sure that they were good reasons at one time—they are now defunct, meaningless. Your orders are out-of-date. And we are not your enemies; we are not monsters. Come, look!"

So I climbed out of the pool. It was warm in the garden, and she didn't seem to mind the way I was (or wasn't) dressed. Maybe buck-naked was the way prisoners of war were kept, here. Or honored ambassadors and other guests of state. Or monsters from another star. Or whatever the hell I was.

The touch of her hand on my elbow thrilled me. With delicate, nymph-like step, she moved up the little terrace-slope and past the hedge. I felt her warmth. smelled the hint of her perfume, as she stepped past me.

The grass was cool on my bare feet, pleasant, and dew-drops from the tall ferns near the hedge touched my neck and shoulders with icy dots of shock as I pushed through them.

She gestured to the wall beyond the trellises. A large section of wall faded into transparency.

I was looking out an expansive window which was halfway up a cliffside. Facing it was another cliff, equally as tall, studded likewise with windows. Between the two canyon walls, a little strip of gray-blue sky showed high above. The canyon was crossed by a hundred bridges and aqueducts. Odd-looking people strolled the lanes or rolled on wheels. Some were animal-headed or were part-machine. They were slender and tall, almost bird-like; perhaps a side-effect of the lighter gravity. Everyone wore cloaks (or were their wings?) of muted colors, mauve, tan, blue-gray, tawny, brown.

I stepped closer to the huge window.

From the window, I could see a park underfoot, bright with shrubs and flowering green bushes. Several waterfalls

Forgotten Causes

cascaded from nearby aqueducts, formed little brooks across the lawns, and gathered at a central pool. Children frolicked in the pool. I saw a mother dangling her baby above the water, and it smiled and splashed its little toes.

I was very conscious of the woman at my shoulder.

She pointed at the scene. "We are the men beyond mankind; we are post-human; we have re-engineered our minds and bodies to survive the harsh conditions here on Avernum. Our minds have been restructured; we exceed old human limitations, selfishness, greed, individualism, disloyalty. Does that make us forfeit our right to live in peace? These are the people you tried to destroy. Look at them; wives and husbands, mothers and children, boys and girls. Has the force which sends you justified its evil acts to you? If so, that is an explanation we are all eager to hear."

"I don't have an explanation," I said. "You've medically examined me. You must know I don't remember a damn thing." A note of bitterness crept into my voice: "I don't even remember who I am."

She nodded, looking not a bit surprised. "I will remind you. What you are, Marshall Lamech, is a remnant of the far past. You are the forgotten left-over of some ancient war. An unexploded bomb. A dormant virus. A relic. You come from a world long dead."

"For forty years we watched the flare of your ship's deceleration as you approached from deep space. We welcomed you, but your ship would not land. By radio, you accused our ancestors of some long-ago attack against the Earth. You demanded we accept you as our police and prosecutor, judge, jury, and, if need be, executioner. Yet you had no right to stand in judgment over us.

"Then you attacked us, killing and destroying. That is fact, which no regret, no dwelling on the past can alter or ameliorate. Now we must concentrate on the future. Do you wish to have a future? We are prepared to offer you a life useful to the Collective, a role within our society, material comforts and... pleasures."

My imagination was a lot too eager to fill in what kind of pleasures I'd like to get from her. But I tried to keep a stony face. "Yes... ? Providing... ?"

"... Providing only that you cooperate. Radio your ship, arrange a rendezvous. We wish to inspect this ship of yours. Any men, material, or technology aboard will be turned over to the Collective and used for the public good."

"And—just for the sake of argument—let's say I refuse. What then?"

"Pain and torment, agony and death..."

"Gee. Why am I not surprised... ?"

"Not for you. I don't know what would happen to you. But I will have failed in my mission. You must have noticed my body-form is not proper." She gestured again at the slender, birdlike not-quite-humans gliding on the bridges

and balconies outside. None of them looked like her. "I was designed for you. For your environment. I cannot live outside this museum, this terrarium. Without you, I have nothing..."

"Designed... ?" I wasn't sure I liked the sound of that.

She smiled again. It was a sad, soft smile. "We had forty years in which to prepare. There were genetic archives, old records from the Once-Home-World."

"You are a slave?"

"I do my duty and I obey my orders. Are we so different from each other?" When she smiled, she had dimples. "But why dwell on unpleasant things? Happiness and joy awaits all who are loyal to the principles of the Collective. But you must not delay in deciding! For, see: the Correction Instructors grow impatient!"

I turned. Coming up the grassy slope behind us, pushing through the flowery hedges, came four tall, angular machines, like oversized preying mantises. The robotic carapaces were covered with thorns and hooks. Their thoraxes held turrets. Some of the weapons I recognized: rail-guns, hard-shots, flamers, neural whips. Others, I did not. Nothing looked pretty. But they were quiet as cats, and they stalked closer.

I jerked my thumb at the approaching monsters. "So they are 'bad cop,' I take it?"

She huddled close to me, as if for support. Automatically, by instinct, I put my arm around her. It felt good. She looked up at me with her wide, green eyes, and she said in a troubled voice: "What makes you hesitate? You yourself admit that you recall nothing; if there is a reason for you to be loyal to your mission, you have forgotten it. Is there any point in dying for a forgotten cause?"

I pushed her around behind me, put my foot on a nearby tree, and, with a grunting shrug, tore off a branch. I turned to face the approaching



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machines, branch held in both hand, like a club. Little green leaves floated down from my impotent impromptu weapon.

The machines stopped and pointed their various barrels, lenses, and mussels at me. There was a metallic snap as the lead unit jacked ammunition into its chambers. I heard the hissing ultrasonic whine of plasma-magnetics charging. With a loud clatter, gas-shells and flame cartridges slammed into gun-breaches. Little red dots from aiming lasers floated on my naked chest.

I felt about as stupid as a man can feel.

But, hey, the way I figured it, I'd rather fall weapon-in-hand instead of hands-up. Even if the so-called weapon is nothing but a green stick.

"You will be led now either to a bridal chamber or a torture chamber, Marshall Lamech," came the soft voice from behind me. I could feel her soft hand on my back, her scented breath on my ear. "Defiance is pointless, unless, of course, your goal is to ensure both our deaths. But why fight? Do you remember any reason to fight on?"

Her other hand, no doubt, was readying some small-arm from her pocket. What was the reason I had turned my back on her again? To protect her from . . . whom? Her own allies? Her own superiors? (I think I've mentioned how stupid I felt just then.)

"I need some answers first," I said.

A masculine voice issued from all four robots at once: "Little time remains! In a few minutes, your ship's orbit lifts her above the here-now horizon. We do not wish your ship to have direct line-of-sight with this area; her energy-silhouette indicates a particle beam weapon is ready. We are directing radio-signal toward her, but she will not respond to us. Call! Order your ship to stand down! You need but speak aloud; we can convey your words to the broadcaster. We are all-one system."

The Ship had told me it was OK to cooperate with these people here, provided it did not impede the mission. But did this hinder the mission?

And was the cute emissary behind me right? Did I even care about the goddamn mission?

I spoke: "Who killed the Earth?"

I felt the breath of the girl behind me in my ear: "What does it matter? The question is entirely academic. Earth is long, long gone. And what do you care even so? You are not from Earth. The medical evidence shows that your body is only a few weeks old. You were constructed, fully grown, from genome records, during deceleration. You think you are a human being, but you are not. There are no human beings."

I decided I didn't like having the girl behind me, so I stepped sideways to put her in my view. As I thought, her right hand was in her skirt pocket, clutching something heavy and rectangular.

Unfortunately, the robot on the far right now glided forward, so that it was behind me. I didn't like that much either.

And it got dark. The sunlight was failing. But it was not dusk. A glance at the window showed that some roof or blast-panels were sliding over top of the canyon outside, closing all the city under a giant lid. I saw people rushing, but no panic, no show of emotion, except that some of the babies in the park were crying. What was odd about the scene was that all the people were in step. They were marching double-time but they were clearly in step, all being controlled by one mind, one will.

Like a chorus, four copies of the same masculine voice came from the robots: "The decision horizon reaches unity! The unintegrated organism known as Lamech must proffer cooperation behavior! Order your ship into close orbit, weapons stand down, shut off reaction drive, open airlocks, prepare to be boarded. This course of behavior leads to reward! All other courses lead to corrective penalty! Speak now!"

The girl spoke softly, her green eyes looking deeply into mine as she swayed forward. "If you are not a human being, what would it matter to you if the home planet of the human beings had been destroyed? Besides, there is nothing you can do about any of that now. That issue is dead. A thousand years dead. Only your life matters now. Doesn't it? Doesn't it?" Then, more softly, she whispered: "It matters to me, if not to you."

But I noticed she did not step between me and the mantis-robots. In fact, they were both in motion, she daintly stepping forward, eyes soft and pleading, and perhaps a trifle afraid for me; and them, creeping catlike on their twitching spider-legs, gun-barrels and projectors swinging to track me, fanning left and right to cover possible avenues of escape.

Funny how they stepped that way. It was little things that attracted my attention, such as how her head moved ever so slightly to the left while the upper launcher from the killer-robot nearest her slid ever so slightly to the right, so that spent shell-casings from its ejectors would not graze her hair once it started firing. Very smooth. All choreographed.

All controlled by one will.

I said, "I don't believe you."

She said, "Ask your ship. Talk to it. Simply speak out loud."

"Ship! Are you there?"

I counted. One Mississippi, Two Mississippi. Then, the beautiful, beautiful Voice of the Ship answered, as placid and perfect as only unliving voices can be: "Message received. This line is not secure. Switching to encryption. Please confirm if you understand me." This last group of words was somehow different, but I still understood them.

About two seconds delay between signal and response. So that ship was roughly 186,000 miles away. Rather high for a firing orbit. The bad guys implied she had opened her weapon-parasol, and powered her particle-beam weapons. Was she going to fire a directed energy beam from that far away? Through the atmosphere?

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"I understand you," I said, and the way the words came out hurt my throat.

Really, I understood almost nothing that was going on in this whole mess. But I did understand that the Ship was preparing a volley against satellite targets, something in high orbit, near her. Otherwise, her posture did not make sense. The target satellite had to be emerging from what was (relative to the ship) the planet's communication shadow.

I noticed the cute emissary had taken her hand out of her pocket and was holding her ears.

I said, "Give present target orbital elements."

That was when I realized that what was coming out of my mouth was not words; it was some sort of strident whining noise, a mathematical set of hiccup and shrills. It sounded terrible.

The Ship: "Requested information cannot be broadcast on non-secure channels. Switching to secure channel . . ."

The noise of the Ship's Voice coming out of the speakers was the same hiccups and shrieks. An encryption. The bad guys were passing it back and forth between us, but I doubted that they could decipher it.

They must have doubted it too. Maybe they had given it a try, and given up, for then they said (all four in unison, just like a boy's choir): "Interrupt! Private communication is selfish, irregular, impermissible! Unaadapted Lamech-entity continues to conspire against the Unity! His actions do not conform!"

The girl put her hand back in her pocket, now that I wasn't making an ear-splitting squeal. She said to me, "What were you talking about with your ship? Did you ask her whether you were human? Did you ask her why you were here?"

The robot-quartet chimed in: "Consult with central dogma! Formulate a danger-assessment of Marshall Lamech's character, extrapolate, react! Awaiting verdict."

The girl flushed. She looked actually angry or upset. "Wait, masters, I beg you! He may still be willing to help us! Give him time to think! Stop treating him like the enemy; he is as much a victim here as we are!"

The robot crew actually stepped back. Certain weapons were holstered; others powered down. I heard the ticking of the energy-direction barrels cooling, the whine of multiguns going into standby-cycles.

Was that supposed to reassure me?

She turned back to me. "Please! There are more lives involved here than just yours! You've got to believe us! We are not your foes, how could we be? Whatever happened to Earth happened thousands of years before we were born!"

I saw how her eyes glittered; she seemed about to weep; and her bosom heaved with passion, her cheeks were blushed with fear.

Good acting. I almost bought it. Almost.

I wondered were they had gotten the algorithm to mimic human body language, nuances of gesture. I wondered how, just working with mathematical code and old records, they had been able to match up specific gestures with specific emotions.

The sheer genius of it was even more impressive if you figured they did not know what "emotions" were anymore, not really; they must have been judging states of mind by statistical analysis.

They? I should say 'it.' It seemed to be one system.

And evidently its knowledge of body language/gesture algorithms was very exact. At that moment I "heard" a high-frequency communication-burst, coming from a point outside the building, reach out and touch receiver cells in the four robots, and, yes, also in the nervous system of the girl. The so-called 'girl'. The message ran: "Biochemical gestalt reactions of unin incorporated Lamech unit display rejection-behavior. Probability 89% disbelief; it will initiate aggressive-defensive complex motif shortly. Neutralize. Terminate experiment. Log expended resources as wasted. . . ."

I must have sped up then. The sound in the room doppled down the scale, and I felt a familiar burning heat in my limbs as my muscle pressure increased, a dizzy moment while high-speed superconductive strands took over the signal-transmission from my nervous system. And I jumped into the middle of the damn fighting robots.

Yes, I hit one with the green stick in mid-jump, and, yes, the blow struck the joint where the slugthrower was coming up out of its cleaning holster, so that the shell went past my head rather than into it, and hit the robot behind me in the magazine box. And yes, my skin turned mirror shiny where the aiming lasers touched me, reflecting them away, so that the beamriding smart bullets (which followed those beams) popped their tiny retroes and slammed back toward the third machine they had been shot out from, sending lines of gunfire stitching up the sides of two of the fighting units. One of them was hit in its target-finding lens-array and vomited napalm in my direction, but missed me by a country mile. I ended up with my foot broken where I struck the forth machine, but I toppled it from its legs.

Yay and hurray for me. And no, being knocked over did not stop machine number four from shooting a smart-grenade into my guts, or taking off my left leg below the knee with a fan of energy. The grenade did not go off for some damn reason (counter-electronic built into my goddamn belly-button?) it just passed through me, but that was enough to uncoil some ropy blood-colored spaghetti all over from inside of me, (amazing how weird and ugly intestines look, when they're yours) and for me to loose all sensation in my legs, and for hydrostatic shock (which should have killed me instantly) to blow out my eardrums and crack several teeth. I was slapped to the grass by some immense force (or immense clumsiness) and the ungodly pain which wracked my every torn muscle, the disgusting weakness and nausea, the sensation of freezing and burning convinced me that I had about two seconds left to live.

And what a goddamn stupid life it had been. How old was I? An hour? Less? Not counting time when I was asleep. My first memory was falling from a blown-up landing craft. If I had had any life before that second, if I was going to have any

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life after this second, well, you sure as hell could not prove it by me.

It is amazing what it feels like when your blood pressure drops to zero, or what it is like to see a red flood sweep out from what had once been your midsection all across the pretty grass and pretty flowers. (How long can a brain keep thinking once severe blood-loss cuts all its oxygen off?) Even the weeds were going to last longer than I was.

I was still sliding across the grass, actually, still being carried forward by the momentum of my original kick, or maybe I was being blown back by the shot that killed me. The whole combat had not taken an entire second to run its course.

My body (I could feel it dimly) was still jerking, like a slab of meat being slammed by a fire-poker. That was small-caliber antipersonnel shot coming out of machine number three, which was hunching over me like an eager spider, two pair of twin-barrels hammering away. Blue smoke trembled from hot barrels. The sound seemed so dim. I wondered how I could hear it at all, me with my eardrums blown out. It should have been impossible for me to hear anything. One more unanswered question in a short, strange, stupid, pointless life. One more impossible thing.

Damn liars. They had been telling the truth all along. I guess I was not a human being. Not even close.

But was I still alive? . . . ? Maybe for a second or two longer. Alive.

And that just made it too damn early to quit.

So I reached up and thrust my fingers in a knife-hand blow into the weak undercarriage of machine number three, where the leg-action elements joined the main power-box. The force of the blow rocked the war-machine backwards enough to elevate the blazing gun-barrels. Machine number four got a friendly dose of friendly fire.

My hand went through the armor into the interior of the machine. Then my fingernails touched the power-core, the computing center, and signals from the bio-circuits in my hand started to trace the communication channels back to the main brain running the whole show. . . .

I began to see numbers in my head . . . timing synch information, addressing data, code/decode couplings, protection switch commands . . .

Then, nothing. I flopped like a puppet with its

strings cut, falling back, all my limbs dead and numb, paralyzed.

Cutie-pie, the girl emissary, had taken that long (her nervous system was biological, remember, not photoelectronic) to twitch her thumb. I "heard" the signal come out of the box in her pocket and "saw" it touch some foreign metal objects implanted along my spine and hindbrain. Just some nerve blocks they had put in, simple as a pass-interrupt switch. Prisoner pulling garbage you don't like, and zap, all voluntary nerve trunks cut. Even if the prisoner has some sort of gee-whiz-wow wonder-junk built into his body by the miracles of modern science, so what? Doesn't matter what weapons he has in his hands or built into his armpit; if he can't fire them, he's a meat bag.

So I lay there, one leaking meat bag. Still conscious, even though the little black sparks were getting brighter every heartbeat, and the scene around me was getting dimmer. Funny how it felt like I was floating, falling. Funny how you don't need conscious control of your nervous system to drool blood all over yourself. Blood was coming out of my nose also. I bet I looked all yummy and kissable.

She said, "The experiment has confirmed our suspicions; when put under pressure of immediate death, subconscious pre-conditioning took over. His reaction was to attempt to seize a communication node, and link into our mental system. The coded addresses his probes began to form were for deep-archives, for history data from the estimated launch-dates had the attack on Earth been ours. His mission was investigatory, not unlike the others. . . ."

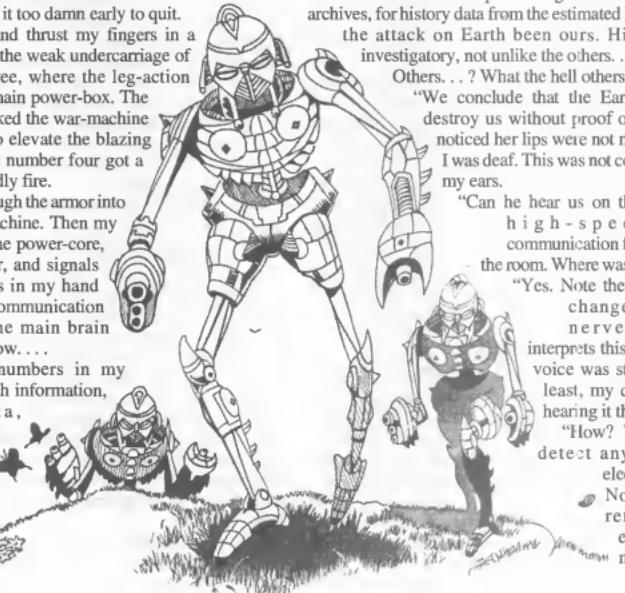
Others? . . . ? What the hell others?

"We conclude that the Earth-ship will not destroy us without proof of culpability." I noticed her lips were not moving. I noticed I was deaf. This was not coming in through my ears.

"Can he hear us on this channel?" A high-speed zap of communication flickered through the room. Where was it coming from?

"Yes. Note the electrochemical changes in auditory nerves; his brain interprets this as speech." Her voice was still pretty, or, at least, my dying brain was hearing it that way.

"How? We still do not detect any machines or electronic circuitry. No antennae. We removed all the energetic cells and manipulators our



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micro-probes detected in his nervous system."

"Others may have been too small to detect. Or they grew back." She sounded thoughtful.

"Grew? Grew?! It has only been a few minutes!"

And my brain was interpreting this as if it were a conversation. It was not. It was one mind talking to itself; an internal monologue.

One system, one collective, housed in many brains and neural nets, biological or not biological, as needed. A system old enough to have done the deed?

If so, what had been the motive? Who would fight a war across the uncountable distances and meaningless emptiness of space? The damn nothingness is so damn big and so damn empty that everything men dream about doing, every cause they dream about fighting for, or against, means not a damn thing; not a damn thing at all; not hatred, not revenge, not anything.

The part of the collective mind I thought of as the cute girl was saying to her other selves: "We have no information about the sciences of Old Earth, or what developments might have taken place, over the centuries. Without information, it is premature to form expectations, irrational to be surprised."

She turned to me: "Call off your attack! We have been forced to hurt you only in our self-defense, because you continued to resist. Surely that is legitimate! You cannot prove us guilty of the ancient crime against the Earth; we are not your subjects, you are not our king. Call off your ship."

I could not talk or move and I was bleeding—bleeding heavily—bleeding to death. So I merely thought to myself: "How do you want me to do that, babe? Am I supposed to be able to talk to my Ship just by thinking at her?"

Without any fuss or bother, the Ship's Voice came softly into my brain: "That is within the operational parameters of your present somatoform and body-system. Unless that was a rhetorical question, Marshall Lamech?"

I thought: "This channel is not secure."

The Voice of the Ship: "Analysis of the initial code-address packages you retrieved, before contact was cut, from the deep archive communication system has been fed to the targeting computer. The main energy source-points for communication throughout the Avernum Collective appear to be grouped in a centralized bunker beneath a range of tectonically stable mountains to the West of your present location. . . ."

Wait. What was going on now? Had the Ship somehow read my mind? Or some subconscious part of my mind had acted without my knowledge, and broadcast to the Ship just the tiny beginnings of what I had tried to steal from the Collective communication node. So the Ship now knew where the enemy HQ was hidden.

If they were the enemy . . .

The beauty of the Ship's Voice came again: "Firing solutions are obtained for central communications bunkers and for the high level satellite arrays which house the main neural network of the Avernum Collective. There appear to be no

secondary or back-up systems present; therefore this single operation should win unparalleled strategic advantage."

The Ship was talking about a blow which would lobotomize the Collective's hive-mind, and maybe kill off everyone on the planet.

Was that a good thing or a bad thing? I could not help but picture all those babies out there, once their robot-nurses keeled over, crying and crying for milk. . . .

The Ship: "We are in go/no-go situation. As the only human member of staff command, and therefore supreme commander-in-chief of all armed forces of Earth, the decision must be yours. Awaiting instructions."

The ignorant amnesiac who had maybe a few seconds left to live? I was not exactly in the best shape to be weighing evidence and making careful judgment-calls. "Return my memory to me so I can make the goddamn decision. . . ."

"Unable to comply. This mission is still on a need-to-know basis, and you are a prisoner behind enemy lines. . . ."

I gave her an order which was anatomically impossible and probably illegal in most jurisdictions.

And the Ship replied: "I will interpret that as an order to restore biocommunicative neural strand linkages to your command, since this action would be necessary before any sexually reproductive features can be initiated. . . ."

The bad guys must have broken the encryption on my communications just as I raised my head, because I overhead three high-speed zaps of communication flicker through the room, one part of the Collective talking to another part.

First message: "His ship will not fire without his command. All of our assumptions were wrong: this is not merely another man-shaped expendable war-unit; he is the real Marshal Lamech! The original template! He will not issue the firing-order even in the extreme of death, since he cannot kill the innocent, and he does not know if we are guilty. . . ."

Second message: "His internal nervous system has changed its configuration; the nerve-blocks are being penetrated by an unknown signal, or he had grown by-pass tissue. . . ."

The answer: "The experiment is an utter failure. Kill him at once."

And maybe the Collective was not so collected and centralized as I had thought. Because when the girl heard the kill-order come down, she shouted, "No!" and stepped into the line of fire, trying to protect me.

I did not see any signal traffic when she did it. It was not an outside order. It was just her.

I swear to God I do not know how it was possible for me to jump to my feet with my guts still hanging out. I was sure my nerves were dead; biocommunicative strand must have been getting instructions from my brain and jerking dead muscles. Sparks making a severed frog leg flex, I guess. Red intestines slapped against my legs like a wet towel, and I drove my hand through in into the control processor of machine number three, same hole I had made before, but this time I had all the commands ready. On my fingertips, so to speak.

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One group of my orders took control of war-machine three and had it open fire on its friends with every gun and energy-antennae. A second group bocked the local communications net, so echoes of false orders were reproducing themselves, shouting back and forth across the room in a little chorus of chaos, setting off sprinklers and opening and shutting doors. A third group demanded answers from the archives.

But the archives were closed; the lines were dead. The Collective was too fast for me. I could detect some local system traffic in the area, though, and I could see a huge number of channels turn over a huge number of orders to something in the area, even if I could not read those orders. . . .

Even though I was deaf, when treads a yard wide tore up the soil, I could hear it through my broken teeth. Nine or ten heavy armored vehicles had been buried under the gardens here, and now they rose up, saplings and hedges toppling from their upper turrets, yards of green turf sliding away, fountains and statues being shouldered aside, earth crumbling. Not little police units like my four preying mantis friends here. No. These were the big boys. Battleship guns swung my way and centered on me.

I assume they opened fire with everything they had, throwing out a few thousand pounds of shells per second in my direction. I also assume that some sort of primary assault orbit-to-ground directed-energy fire from the Ship cut through the roof blocking the canyon outside at that same point in time, shattering the huge plate glass behind me and burning away all the antennae and periscopes of the supertanks (and perhaps of few chunks of melted outer armor). Because I assume they must have been blind not to hit me.

I also assume that the inside Earth-normal air pressure was somewhat higher than the native Avernum outside air-pressure. I assume that is what picked me up and flung me headlong backward out the window.

All this is assumption. What I remember is those huge battleship guns swinging to cover me, and then, after a moment of noise beyond noise, I woke to find myself floating again. A nice safe, comfortable sensation, falling is. Reminds me of zero-gee.

I still had the robot, fighting machine number three, in one arm, and, somehow, I had the girl in the other arm, who I was beginning to believe was not a robot. She did not seem that hurt. Not compared to me. The wind whipped her long black hair around her as we fell, and her eyes were all white in their sockets.

We were falling though the beam of sunlight which slanted down from the huge melted circle, lipped with white-hot molten stuff, which had appeared in the metal roof over the canyon. Windows and windows slid past us, and not-quite-people-shaped silhouettes stood and watched us fall.

I could feel her warmth in my arms, I swear I scented the perfume of her hair, despite the stinks and burnings and vapors we fell through.

With no eardrums, the whole scene was ghostly quiet. Eerie, actually.

I said to myself, "Ship! I am feeling sort of like an indestructible god at the moment. This techno-crap the Designer stuffed into my body can doing fucking anything, right? Tell me how I can save the girl."

Really, I wasn't too worried about the three hundred yard fall. I was assuming, after what I'd just been through, that my super-body could let me hop out of ar y crater I made and just dust myself off, smirking. But the girl might not be so lucky.

The Ship Voice came loud and clear, as if she were right by my ear. I wondered why the signal was so strong. "There is no parameter for that operation, Marshall Lamech. The concussive force from a fall from that height, given the frail construction of her body, will most likely result in death. However, a communications bio-filament inserted immediately into her central nervous system should allow a read out of brain-cell charges sufficient to construct a mnemonic read-out. . . ."

"You mean I can suck her soul out and put it somewhere else? Give her a new body, new life?" I had already stuck my finger into her ear, and I felt my fingernail dissolve into a swarm of tiny assemblers, sending strands into her skull.

"Not at all, Marshall. It may provide us with some useful postmortem info. . . ."

I hit the ground and the lights went out for me too.

More floating sensations. This time it was because I was stunned.

When I came to, I was still standing within sight of the place where I fell; I could see it through remote cameras. I was on a green hill, with pools and fountains gathered around the foot of the hill, and chunks of broken canyon-roof armor were toppling with slow vast grandeur to the gardens to each side. One whole side of the canyon had had all of its windows blown out. The sunlight was slanting in through several holes melted in the roof.

The signal traffic in the area was a hash. The Collective was sending unsynchronized squawks from one segment of itself to another, all up and down the canyon-metropolis. Arguing, contradicting itself. I saw some war machines firing at each other, surrounded by toppling building-structures and broken glass. When one started to turn its guns toward me, an intolerable flash like the wrath of God smote down through a hole in the canyon roof-armor and burnt it like a bug under a magnifying glass.

It all made sense. The reason why the Voice of the Ship had been so loud and clear had been because she had infiltrated and subverted the communications satellites. Her directed-energy main battery had been making pin-point shots far beyond her unassisted targeting range. Not a problem if the local satellites acted as spotters, and sent her targeting info.

Which all meant that the Ship was in a position to give the Collective a lobotomy. She had the planetary mind by the balls

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as long as its intercommunication was going through a satellite system we now controlled.

I was in armor again. Parts of the armor were boiling and seething, but not hot. And the hue of the metal seemed familiar. I could 'see' on a microscopic level, all the little assemblers and disassemblers that had poured out of my intestinal tract were fitting the cannibalized crystals of metal, stolen from war machine three, into place, one quick molecule at a time. My insides, without asking me, had just been programmed to turn that machine I had been holding under my left arm into raw material and to manufacture a new battlesuit. Swell. Nice engineering. I also assume my body had been programmed to keep fighting while I was unconscious, because there were a half a dozen corpses and pieces of wreckage scattered across the slope below me.

And my body also must have had some programming inside whatever circuits the Designer had seen fit to install in my groin. My he-man instincts were still good; because the girl was still in my arms.

So I can even kick ass in my sleep. And rescue the girl. So I'm that good:

Or maybe not.

Rescued? I did not think so. She was covered with blood. My blood? I was amazed it did not eat her like acid or something. Maybe it was hers.

I put her down gently, and her dark hair spilled across the green grass.

As I did, signals reached me. The tiny Collective-cells in her nervous system were broadcasting.

"All records of the crime, if there had been a crime, had been erased . . ." her 'voice' was dreamlike, soft and sweet and sad. I thought it was the loveliest thing I had ever heard. "We knew ourselves guilty of some crime, because of the gaps in the memory records, the world-wide deletions from all libraries, the uniform wreckage of space-stations which no records showed had ever been built . . ."

The little machines living in my bloodstream had also manufactured another brace of remotes, and I had one, no bigger than a dragonfly land between her breasts and take a reading. No breathing; no pulse. No real brain activity, only an electronic ripple through the girl's nervous system.

Her voice came again: ". . . Refueling stations for some large vessel, perhaps a two thousand years ago or more. But why had we destroyed our own memories? Erased all knowledge? Only because we feared the coming of the vengeance of Dead Earth. A terrible vengeance. Once we heard your name, we knew. From the oldest records. From the Bible of the Judeo-Christians."

I knew the words. They were in my memory. Ancient words. I said them aloud: "'Adah and Zillah, hear my voice, for I have slay a man for wounding me, and kill a youth for striking me, and if Caine shall be revenged sevenfold for any wrong done him, truly Lamech shall be avenged seven times sevenfold . . .'"

I shook her shoulder. "But why? Why did your Collective help send an attack against Mother Earth? Six Hundred Eight light-years away! It would take a thousand years for the weapons-mass to travel, and then six centuries after that for any signal to reach you telling you you'd made a strike. Why?"

The Ship's Voice was loud and bright in my ear: "Marshall Lamech, the subject is clinically dead. What you are hearing is not her speaking to you, but is the last few random discharges of her brain cells, being stimulated and read by the strands you injected earlier."

"You mean I killed her. By injecting her brain with brain-eating gunk."

"Not at all. She suffered cardiac arrest when several bullets which severed her spine, and suffered additional trauma from heat-discharges, the fall, and from exposure the atmosphere of Avernum, for which her lungs were not adapted."

And yet, dead as she was, the girl answered my question. Maybe the words had been in her dying thoughts anyway. Or maybe the Ship did not know everything about the human soul.

The ghost-thoughts touched me: "Only our rulers enter true one-mind unity of the Collective. Officers receive instructions and communion. The rest are work-thralls and serfs. We are not whole. The Collective promises true unity will be achieved on the day all are unselfish enough to serve without reward; and says no other system, no other form of living, is desirable or possible. But Earth, Mother Earth, kept speaking to us."

"The radio signals from Earth made lies of everything the Collective promised. Where were the riots of Earth? The starvation? Where was the tyranny and evil caused by individualism? Why were the machines of Earth the servants and not the masters? Why were they wealthier than we were? Even six hundred years out of date, each broadcast displayed new marvels. And anyone who could run up a simple short-wave radio antennae and point it at the stars could hear."

"And so the Voice of Earth had to be silenced. Yes, we knew the Voice of Earth knew nothing of us, was not speaking for us, but was sending signals to some colony further distant still. But the mere fact that hope and freedom and individuality existed anywhere, anywhere in the universe, was enough to condemn them. The Collective could not tolerate the knowledge that anyone, anywhere, was not as we were, and lived in greater happiness than anything we knew. . . ."

The ghost-voice grew silent. I shook her again, gently, by the shoulders, hoping that might stimulate the dead brain cells.

I caught a wisp of last thought, perhaps something from her childhood. ". . . I am not like the other girls in the dorm. The air is bad, and I am sick all the time. I was made for another world . . . I was made for another kind of man. . . . Lamech . . . made for Lamech."

Then: ". . . I hope he likes me. . . ."

I opened my faceplate and kissed her on the forehead. Then I laid her out as gently as my rough hand could on the grass.

Absolute Magnitude

"Ship," I said, "I assume the Collective cannot talk to itself right now, but has broken down and is fighting itself."

"Each regional command in the local area is asserting supreme command. On the other continents of the planet, Collective communication is uninterrupted. However, subversion of their satellite array does not allow them much strategic response. If the Collective wishes to survive as an intact entity, it will be able to do so only on such terms and conditions as you wish to impose."

"Well. There are going to be a few reforms; I can say that much. I may not remember what things were like back home, but this place . . . this place sucks."

"We are no longer in urgent mission status, Sir. You are cleared to have access to secure information. Would you like your memory back?"

"Just hold on a moment."

"Standing by."

"They mentioned 'others.' I was not the first mission down. Don't tell me, let me guess. I sent out clones of myself. I am the only human being left alive, right? So they must have been grown out of me."

"Would you like your memory restored, Sir? Standing by."

"And those missions failed. I guess those had been actually my sons, weren't they? Maybe not in the eyes of the law, but actually, really. Soldiers under my command. My boys. Grown in a tube or something, but my babies and I was responsible for them. Right? Dead now, I assume, because of me."

"The Avernum Collective was willing to stand down their orbital defenses to allow you to pass, once they suspected you were the true mission commander, that you alone had plenipotentiary powers to spare or to condemn the planet. You knew it was a trap, but were confident you could elude it."

"But why send anyone down here at all? Why not just command all the operations from orbit? From where it is safe?"

"An excellent question, Sir, and one to which I wish I had received an adequate answer."

"What did I give as my reason? If I am actually the CO, risking my life on a ground op is just absurd. It is against all military principles."

"You said there were other principles. You said your mission was more than just a military one, Sir. You said no judge should weigh the evidence without seeing the accused, no jury should pass sentence on a prisoner without given them a chance to be heard. You said no executioner should kill the condemned without first looking into their eyes."

"But these aren't the real condemned. It sounds like they aided and abetted. They helped refuel and resupply some interstellar vehicle originating somewhere else, another colony."

"That is consistent with what I have recovered from their redacted archive records. Standing by to restore your memory. Will you give the order, Sir?"

I sighed.

"Tell me if I am human, first . . ."

"Due to weight considerations, the Designer thought it best to minimize payload, and ship merely a cryogenically suspended brain with instructions to grow any needed body or body-systems upon reaching target. In order to deceive the Avernum Collective, it was thought that a human-shaped body, but equipped with certain . . ."

"No. Belay that order. Shut up. I am really not sure I want to know the rest just yet."

I sighed again, looking down at the poor dead girl. I did not even know her name. Maybe they did not give out names on this damned world. I wished she had had a nice-sounding one. The only other Homo Sapiens alive but me, it seemed, grown from museum-stock for my benefit. What a waste.

"Ship, there are how many colonies of Earth? Not including this one."

"Five have broadcasts radio signals between fifty and seven hundred fifty years old."

"And one of them is the suspect planet now. As soon as my memory is back, I'll be under orders again, right? We'll have to race off and go smite someone else, I suppose."

"It will take thirty years to build the equipment to create the conversion fueling station in near orbit about the local sun, Sir. But, yes, the instructions from the Designer require we not take undue time at non-mission related tasks, lest our purposes be forgotten."

"Great. But, at the moment, I'm not in dereliction of duty yet, am I? So, to answer your question, no. Leave me ignorant for now. As soon as I recall what is really going on, I'll know whether or not this mission was worth doing, or whether this whole thing was a thundering clusterfuck, won't I? And while I don't know I can still hope that all this mess was somehow worth it. So leave me alone for a while. I'll tell you when I am ready."

I had part of my armor grow itself into an e-tool, and I set about to dig a grave, right there on the flowering hill. It seemed like a nice enough spot.

I was standing in a half-dug grave, when I looked up and said. "By the way, Ship . . . ?"

"Yes, Marshall Lamech?"

"What the hell is the point of this anyway? Revenge a thousand years out of date? Why did the Designer build you and me to do this?"

"You yourself are the Designer, Marshall Lamech. I assume you will recall your purposes when you ask for your memory back. Standing by. Will you give the order?"

I looked down again. "No. Let me finish this first. I just can't stand seeing a job half-done."

"On that we are agreed, Sir."



Book Reviews

Reviews by Mike Jones

Murphy's Gambit, by Syne Mitchell
Roc, 377 pages, \$6.99
ISBN 0-451-45809-5

From newcomer Syne Mitchell comes *Murphy's Gambit*, a gripping tale of adventure, intrigue, and exploration that explores a future where we've finally achieved the stars, and taken a whole new breed of slavery and prejudice with us. Thiadora Murphy is one of the "floaters," the genetically-altered subset of humanity created to dwell and thrive in the hazards of zero-gravity situations. Not much more than indentured servants, subject to the whims and demands of the powerful Corporations that own entire solar systems, the floaters have developed a culture and mythology all their own—one in which the name of Murphy, Thiadora's father, is revered and respected for his daring and unorthodox adventures, including the one he never returned from.

One of a kind, Thiadora, better known simply as Murphy, is the only floater to overcome prejudice and constant mockery to attend the military training academy of the Collective Enforcement Agency. It's what she wants, and she's willing to turn her back on her own culture to get it. But it's not so easy for everyone else to let her forget it. Six years of being picked on hasn't helped her temper one bit. And then powerful forces conspire to have her framed and expelled from the academy, leaving her on her own, with no choice but to sign on with one of the powerful corporations, such as Gallger Galactic, Avocet, or Canolyne.

Everything makes perfect sense when she signs on, pretty much as a last resort, with Avocet, and discovers that what they really want her for is to help steal an experimental ship from rival corporation Gallger Galactic. At stake is a revolutionary new technology that would allow a single ship to launch itself, crossing light-years instantly, a technology controlled only by the Corporations. Until now. Caught between a rock and a hard place, Murphy sees another way out. With the *Gambit* as her bargaining chip, she could write her own ticket, give unparalleled freedom to the floaters, or end up dead for her troubles. With Kyle, the double-dealing employee of Gallger who first contacted

Avocet, as her only real ally, Murphy has to fight her way through the ever-thickening threads of a mystery surrounding the *Gambit*, Gallger Galactic, Avocet, the floaters, and her own missing father. Where did this unique self-launching ship come from, and what will it take her to? And how will this affect the desperate rebellion of the floaters, who only want to survive on their own terms? And what secret is Kyle hiding, a secret that will put his very motivations into doubt?

By the time everything is revealed, the status quo will have been violently changed, and Murphy will learn more about herself, her father, and her future than she ever imagined.

Murphy's Gambit is a stunning debut, and proves that Syne Mitchell is an author to watch for. The culture of the floaters, one based on scientific knowledge and worship, where they tattoo on their shaved heads everything from the Heisenberg uncertainty principle to Newton's laws to Carnot heat-cycle equations to viral RNA diagrams in order to denote their skills and societal standing, is fresh and intriguing. The Machiavellian intrigues of the Corporations are as familiar as the headlines of the *Wall Street Journal*, but conducted on a far grander scale. Murphy, a woman caught between two worlds and fitting into neither, is a complex and gripping character. All told, this is an encouraging start from a new author, and should appeal to any science fiction reader.

Blind Waves, by Steven Gould
Tor, 350 pages, \$6.99
ISBN 0-812-57109-6

The future lies underwater. After the Deluge, a global flooding caused by the melting of ice caps, humanity lives on what little surface remains above water, or on newly-erected floating cities, such as New Galveston. The second largest division of the American armed forces is the Immigration and Naturalization Service. There's a thriving business in salvage and deep-water exploration, siphoning gas and fuel from the gas stations and pumps of the drowned coastal cities.

Patricia Beenan is an important woman in New Galveston, owning an entire "hex" of the city and the buildings that stand upon it, sitting on the city council, and operating her

family's salvage business. She's got some good people working for her, and a peaceful life. That is, until a routine job turns up a horrifying discovery: a sunken freighter with dozens of bodies locked in the hold, and clear evidence that links its sinking to an INS ship.

The culprits must have guilty consciences, for immediately, Patricia is forced on the run, undergoing a nerve-wracking journey back to the not-so-safe harbors of New Galveston. There; to save herself, she's forced to investigate the mystery of the sunken ship and its doomed cargo. Her erstwhile partner in this investigation, Commander Thomas Becket of the INS, who has his own scarred past to cope with, is the only one she can trust as the layers of this conspiracy are peeled back, one by one. At stake are thousands of lives, and the fragile peace of the seas.

Part thriller, part romance, part mystery, and all science fiction in the forward-looking style of the genre, *Blind Waves* is Steven Gould's best work to date. Inspired equally by Shakespeare and Dorothy L. Sayers, it's a masterful example of blending genres that starts off strong and never lets up on the intensity until the very end. With memorable characters and strong characterization, it's definitely a book worth picking up.

The Sardonyx Net, by Elizabeth Lynn
Ace, 438 pages, \$6.99
ISBN 0-441-00814-3

Originally published twenty years ago, *The Sardonyx Net* helped to mark Elizabeth Lynn as a noteworthy author, a distinction she soon lived up to by winning the World Fantasy Award twice in one year, for her novel *Watchtower*, and her short story, "The Woman Who Loved the Moon." Now we're treated once again to her talents as a science fiction author, with this tale of romance, revolution, slavery, and intrigue.

The planet Chabad is unique among the Federation of Living Worlds, for being the only world where slavery is legal. The human-settled worlds of the Sardonyx Sector chose to banish their criminals to one place, the desolate Chabad, much like the English used Australia to harbor their own unwanted criminals. Over time, Chabad became something more than a prison planet. It became a resort, a paradise built on the backs of the undesirables expelled from the rest of the sector. A resort maintained by keeping

Absolute Magnitude

the slaves addicted to the euphoric drug, dorazine. A drug that is illegal to actually ship or sell, but upon which the entire social system of Chabad now depends.

It's into this treacherous world that Star Captain Dana Ikoro is unwillingly drawn, after his initial forays into drug smuggling leave him broke, and his cargo stolen by another smuggler. In his attempts to recoup his losses, he lands on Chabad, and is immediately arrested for even having the intention to smuggle. It seems that the new head of the Narcotics Division of the Federation police has a particular hatred for dorazine smuggling, and will do anything to crack down on it. Even set up poor Dana for a ten year sentence as a slave.

It's Dana's subsequent luck to be picked out by the sadistic commanded of the Yago Net, the starship which transports prisoners to Chabad. Zed Yago, a cunning and cruel man, sees Dana as the perfect gift for his sister, Rhani Yago, Domina of the family and one of the most powerful women on the planet. Soon acting as Rhani's bodyguard, companion, servant and confidant, Dana is drawn into a deadly and explosive plot to destroy the Yagos and the entire way of life on Chabad. And all he wants is to be free, to roam between the stars once more.

As the stakes are raised, and Dana discovers that there's more between him and Rhani than master and slave, secrets are revealed, secrets which threaten to tear the Yagos apart and destroy everything they hold dear. Their way of life, their system, even their beliefs will be called into question. And in the end, Dana may be forced to choose between loyalty, love, and his own desires, and to save the man he hates most or to escape while he has the chance. Honor will only take you so far on the world of Chabad.

Compelling and richly-detailed, *The Sardonyx Net* is a powerful story, one that plays its cards close and never reveals too much at once. It launches surprises with a ruthless sharpness, just when the reader thinks they know what'll happen next. The characters are fascinating and three-dimensional, sensual and intoxicating and frightening in turn. Zed's cruelty masks a deeper desire, Rhani's sultry exterior is the front for unexpected loneliness, and Dana's own self-sufficiency is pushed to the limits as a slave.

This is a book that deserved to be brought back in print, and shouldn't be missed now that it's on the shelves once more.

Privateers, by Ben Bova
Eos, 392 pages, \$6.99
ISBN 0-380-79316-4

Reissued after 15 years, *Privateers* still stands out as one of Hugo-winning Ben Bova's many outstanding efforts. Although its Cold War mentality might seem a little outdated by today's standards, the plot remains compelling and fresh, and the story is as attention-grabbing as ever.

In a future where mankind has finally taken its first steps off of Earth and onto space stations and the moon, America has given up and thrown in the towel, leaving the way open for a smug Russia to take the lead in the space race. Worse yet, they dominate the markets, both on Earth and off, a tyrannical and selfish economic domination that leaves America in the dirt, and finally opens up the way for other nations to have the spotlight. The new powers that be include Japan, Venezuela, Zaire, India, Polynesia, and the Pan-Islamic countries, all of whom possess vital manufacturing concerns situated in orbit. They are the only powers standing between the Soviets and complete control of the world.

But there's a wild card. Dan Randolph, maverick billionaire and owner of the most powerful independent company in space, allied with Venezuela, an expatriate American, has no interest in seeing the Soviet empire expand any further. He develops a daring plan to steal a passing asteroid, and mine its resources to undercut the enemy. But when his people are kidnapped and his asteroid stolen, it's all-out war of a new kind. If he can't win legitimately, then he'll apply good old-fashioned American gall to the case, and steal the resources from the Russians, exploiting obscure loopholes and straight-forward audacity. And when his people are killed, he'll refuse to back down. America may be too scared to do a thing, but Dan Randolph and his companions, including the strong-willed Lucita Hernandez and the fiercely loyal Nobuhiko Yamagata, will do whatever it takes to break the stranglehold of Vasily Malik and the Soviet powers.

Privateers starts off on a high note, throwing us right into the action, and only then going back to fill in the back story, weaving a complicated and treacherous tale of industry, space, daring, political backstabbing, and ill-fated love. Bova stands out for his ability to mix strong characterization and the finest in science fiction adventure. While it may seem hard to envision Russia in a position of supremacy

now, in the post-Cold War era, it wasn't nearly as far-fetched when it was written. That jarring and even distracting aspect aside, this is a top-notch adventure from a top-notch author. Dan Randolph is both genius and two-fisted hero, a combination that would put Bill Gates to shame. For the same sort of character-oriented adventure that *Absolute Magnitude* delivers, try *Privateers*.

Rebel Sutra, by Shariann Lewitt
Tor, 351 pages, \$24.95
ISBN 0-312-86451-5

The world of Maya is, quite literally, an aristocracy. "Government by the best." And on this planet, settled centuries ago by colonists whose ship malfunctioned on the way to somewhere much better, the "best" means being one of the Changed, a race of genetically-enhanced humans who rule with an iron fist inside a velvet glove. Their home is a work of art, Xanadu in name and form, situated high on the Mountain above the human-only ghettos of Babelon. The Changed are stronger, faster, smarter, longer-lived, and so different as to be almost alien. To be Changed is to be vastly superior to mere humans, and it's in that discrepancy that bitterness, resentment, and the smoldering embers of rebellion are harbored.

Every year, a select group of promising humans are brought up the Mountain to be tested, to see if they will be deemed worthy of serving alongside the Changed. There are jobs to be done, far better than the menial and poorly-paying jobs that await most people. It's a farce, a sop to keep the humans from realizing that they have no chance of ever being good enough. No humans are ever good enough, for the testing requires them to mesh with the Exchange, the supercomputer that runs the colony and requires brainpower to continue working. Only the Changed are sophisticated and experienced enough for this complex test.

With the caste system securely in place, and the simmering resentment between humans and Changed at an all-time high, the time is ripe for change. One year, a human with a gift of oration and a knack for political upheaval meets a Changed woman with that same sense of vision and willingness to defy the status quo. Their time together plants the seeds for the destruction of all the Changed hold dear. For in their future lies death, betrayal, manipulation, loss, revolution, war on a grand scale, and revelations. It's a multi-layered, Byzantine series of machinations that spread over generations,

Primary Ignition

and will culminate in flames and the repudiation of a centuries-old system.

In *Rebel Sutra*, author Sharlaann Lewitt creates a fascinating and imaginative story, space opera with romantic trappings and political complexity, made all the more interesting by drawing from Hindu mythology and Indian culture to flesh out the conflicting castes of the Changed and the humans. What starts off as a love story soon blossoms into something far grander, taking revolution to the Mountain, and to the stars. Secrets unfold as the stories are told, using the voices of the main characters to unveil the different aspects: Arsen, a human driven to rebellion; Della, the Changed woman who's so much more than she knows, whose love for Arsen changes everything; Anselm, their son, who inherits the best and worst qualities of both; and Suu-Suu, one of the mysterious star-traveling Tinkers, whose actions a generation ago may doom not just Maya, but an entire galactic empire.

This isn't an easy read, but only because it's such a complex and tightly-woven story, whose aspects are intricate enough to warrant rereading several times for enlightenment. It comes highly recommended for those who love space opera and harder science fiction, and those who want something just a little different from the norm.

The Martian Race, by Gregory Benford
Aspect, 444 pages, \$6.99
ISBN 0-446-60890-4

When the space race is grounded due to politics and financial cutbacks, private industry steps in. At stake is a 30 billion dollar prize, to any concern that can successfully travel to Mars, fulfill certain exacting requirements, and return before the others. This, then, is the impetus for *The Martian Race*, which is as timely as it is inspirational, a logistical answer to the problems which seem to plague our modern-day efforts to explore the Red Planet. In 2018, humans finally set foot on another planet, and what they find while there could change everything.

Even as the Airbus Group, a European-Chinese collaboration, scrambles to ready their own technology, billionaire John Axelrod puts together his own group of scientist/astronauts, and launches them on their way, taking the world by storm. The Mars Consortium's mission is televised, making them the biggest "reality TV show" ever, and a hit back home. But not all is cake and roses for the intrepid quartet, Julie,

Viktor, Marc and Raoul. To fulfill the mission, they have to spend nearly two years surviving on a planet far from home, where a misstep will kill them, and there's no room for errors.

As the days dwindle down before their return, it becomes clear that the race isn't over yet. The Airbus mission is swiftly approaching, on a vector that would allow them to easily accomplish the parameters of the Mars Accords and get back in time to snap up the prize. If Julie and her companions can't get their ride home working soon....

The fifth member of their team must be Murphy, for everything that can go wrong rapidly does, until it looks as though there's no hope for the Consortium crew. Their only bargaining chip? They've discovered life on Mars, hidden deep underground, surviving on a world where nothing should be able to survive. This is their trump card, their ace in the hole, and their one-up on the rival astronauts.

When disaster strikes, the two crews must work together. And even then, not everyone will return to Earth. The mysterious Martian life will exact a price from those who'd trespass on its planet. In the end, it will be a voyage of self-discovery and growth. Is it the Race-to-Mars, or the Race-on-Mars?

I couldn't put this book down. Benford, who's won the John W. Campbell Award, the United Nations Medal in Literature, and two Nebulas, is in prime form with this book, presenting one of the most realistic treatments of the Mars effort I've seen in a long time, especially given the recent renewed interest in that planet. Merging hard science fiction with logical speculation, he presents as valid a case as any for space travel and extraterrestrial life. NASA should be taking notes.

Reviews by Lucas Gregor

ChronoSpace by Allen Steele
Ace, 336 pages, \$22.95
ISBN 0-441-00832-1

ChronoSpace by Allen Steele is an expanded version of Steele's Hugo-winning novella "Where Angels Fear to Tread." I've seen a number of writers turn novellas into novels before; for the most part, they're happy to just pad the story to novel length and send it on its way. Quite honestly, you're almost always better off reading the shorter version. That's not the case here. What Steele has done is to write two new sections:

one at the beginning that places the original story into a much larger context and another section at the end that brings everything together. So two-thirds of this novel is completely new material.

The novel opens at the planning stages of the time mission that was at the heart of "Where Angels Fear to Tread." The crew of *Oberon*, a time ship, sets out to extract two people who died onboard the *Hindenburg* in order to take their place and find out exactly what caused that famous crash. In the process they manage to change history and set themselves adrift in an alternate time line.

What follows is a tightly plotted, suspenseful read. Steele is a masterful storyteller and this is perhaps his best novel to date. Steele takes his penchant for research as seriously here as he has with every one of his hard sf novels. You'll find yourself going over the details of this story long after you've finished the book. If you enjoy time travel or alternate histories this book is for you.

Mars Crossing by Geoffrey A. Landis
Tor Books, 331 pages, \$24.95
ISBN 0-312-87201-1

This is one of the best first novels I've ever read. Of course, Geoffrey A. Landis is not your typical first novelist. He's already won both the Hugo and the Nebula for his short fiction and he was a scientist working on the Mars Pathfinder mission. That this is his first novel is more a function of his being a very busy scientist rather than his being a new writer. Those who love hard SF will already be familiar with his work as he's been writing sf for more than a decade.

Mars Crossing is a well plotted, fast paced, hard sf novel. I've never read a more accurate or better detailed space exploration novel. Space exploration is what Landis does for a living, and his incredible depth of knowledge is evident on every page. One might expect a scientist of Landis's stature to

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Absolute Magnitude

become pedantic and heap tons of detail upon the reader, but Landis doesn't fall into this trap. This is a story about a manned mission to Mars and as such the astronauts must come before the technology.

Landis gives us fully developed characters that we come to care about. The story unfolds quickly and effectively as the *Don Quijote* lands successfully on Mars. As it turns out, this is the third manned mission to Mars. Both of the previous missions ended in disaster: the first when two Brazilian astronauts died of oxygen deprivation caused by the malfunction of their suits at the Martian poles, the second as it was returning from Mars. Almost immediately, the crew of the *Don Quijote* runs into trouble. The previous mission to Mars had left behind a ship that has been refueling for the last seven years, which was intended to be the return ship for the crew of the *Don Quijote*. Unfortunately, due to unforeseen problems, the ship cannot return them to Earth. Faced with no other alternative, the astronauts set off across Mars with the hopes of finding that the ship the Brazilians failed to return home is still in working order. There are, of course, a couple of catches. First, the ship is several thousand miles away from them, and second, it will only be able to return two of their five to Earth.

What follows is an intense adventure with plenty of introspection. As the astronauts travel across the surface of Mars they spend their downtime thinking about their lives, about how they came to be where they are and who they are. At times, I was reminded of Landis' short story "A Walk in the Sun." Through out the book, Landis never pulls punches and never becomes predictable. In fact, I suspect that there were a number of times when he was having fun with his readers. He set up a number of situations reminiscent of the old pulp adventures where he telegraphed what was to come, except that in each instance what was expected was not what happened. Landis is a masterful writer and this novel may well be the best first hard SF novel since *Mission of Gravity* or *Orbital Decay*.

Reviews by John Deakins

To the King a Daughter (The Book of the Oak) by Andre Norton and Sasha Miller
Tor Books, 320 pages, \$23.95
ISBN: 0-312-87336-0

Grand Master Andre Norton has over two hundred books in current circulation, as

author, editor, or collaborator. Her editorial talent has led her to another excellent choice of a co-author for this book. The Norton touch is as indescribable as the ancient Powers, lurking beyond the firelight of all her books. Sasha Miller has collaborated with Norton before. She brings a surer touch to medieval intrigue, romance, and marriage-maneuvering than does Norton. This seamless collaboration is enticing.

This first book of a tetralogy (Oak, Yew, Ash, Rowan) reaches into the north, where a meteor impact has cracked the prison of an ancient Evil. The Sea Rovers have been driven south in their few remaining ships. They have colonized the abandoned Castle of Ash, since all of its former lineage are presumed dead.

Ysa, the sorcerous, iron-hearted Oak queen, will turn dangerously vengeful when an Ash-daughter reappears, since the girl (Ashen) is also the illegitimate child of the present alcoholic, terminally ill Oak king. His other (worthless) heir may be replaced by a peasant girl raised in the Bale-Bog. Count Harous may want to marry the girl himself, or pair her with a "prince" of the Sea Rovers, for political reasons. Marcella, the Queen of Spies, has been magicked by the queen into love for Harous (and, thus, hate for Ashen).

The xenophobic Bale-Bog residents, having driven out the foundling Ashen when they learned her origins, are on the warpath, and some ancient Power is re-awakening in the lost city in the Bog. Giant, killer frogs and vicious birds only complicate the troubles along the Bog border, since strangers have been discovered penetrating the Bog's secrets. Ashen's feelings for Obern, son of the Sea Rover chief, are stirring, but her mysterious, ancient mentor may reappear at any moment with disquieting news.

Wow! And this is only Book One! The complexity makes slower reading than the usual Norton, but it's worth it.

The Great War: Breakthroughs by Harry Turtledove
Del Rey/Ballantine, 486 pages, \$26.00
ISBN: 0-345-40563-3

Turtledove has done it again: another addition to his "Great War" series. The master of alternate history, he first spun off from the non-loss of the Confederate battle plans before the Battle of Antietam. A Southern victory led to recognition by England and France, an end to the Civil War, a divided Union, and an inevitable new clash a generation later (*So Few Remain*).

The "Great War" series began in 1914. By the time World War I blew up in Europe, the twice-defeated North (Germany's friend) and the South (a British/French ally) were ready to go at it again. The bloody fields of Belgium were duplicated in America and Canada, from the Atlantic to Texas. Turtledove follows the war (North and South) on the home fronts, on the high seas, in the air, and in the trenches.

I can find absolutely no fault with Turtledove's historical projections. Perhaps the unsuccessful Red rebellion in the South is the weakest, but even that is made believable. World War I remains the same: the gory, useless frontal assaults; the leaderships' entrenched stupidity; the poison gas; the evolution of the airplane and submarine; the arrival of tank warfare; the black-bordered death notices for the women in the factories at home. In this, the (almost) final word of the series, World War II looms on the horizon. The Union and Prussian winners would have subjected the losers to the same humiliating reparations that elevated Hitler in our own defeated Germany after World War I.

The book is a "must" for a Turtledove fan, but therein also lies its one flaw. Master of

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Primary Ignition

the epic saga that he may be, Turtledove has so many sub-plots in the air, and is following so many individuals, that eighty pages are required just to re-introduce the characters. He captures the lingering bitterness on both sides and the gut-certainly that Americans will be killing more Americans in a few decades, with aircraft carriers, improved airplanes, and killer tanks. On the other hand, if you haven't read the first two books of the series, you will only be able to flounder along for the first third of this book. I loved it, but will you?

The Truth by Terry Pratchett
HarperCollins, 274 pages,
\$24.00 ISBN: 0-380-97895-4

I feel about jacket blurbs the way a chef feels about McDonald's®. This time the blurbist got it right. "Terry Pratchett's acclaimed Discworld novels have been . . . best sellers in England for more than a decade. . . . [T]his prolific author [has] sold more hardcover books in the United Kingdom than any other living novelist. . . . [O]ne of the most celebrated practitioners of satire . . . his unique brand of irreverent

humor is . . . being embraced across America."

In this, his twenty-fifth Discworld novel, Pratchett introduces the morally baroque city of Ankh-Morpork to the power of the press. Some of the dwarven minority, trying to turn lead to gold, find that they can turn moveable lead type into printed gold. Somehow, non-traditional aristocrat William De Worde ends up overseeing the new printing process.

Their immediate success is attacked by a competing tabloid: people seem to prefer imaginary "news" to documented truth. Meanwhile, Lord Vetinari, Ankh-Morpork's Patrician, is being railroaded from office by shadowy conspirators, including William's father. The City Watch is suspicious of everything, including mass-produced journalistic "truth." The conspirators have employed two evil henchmen to implement the plot's dirty ends. (The villains are such powerful characters that they almost steal the book from the protagonists.)

Pratchett is his usual hilarious self, but in his later books, he has begun asking some really *hard* questions behind the laughter. If the press and the police are both the good

guys, why don't they get along? How much of the truth do you tell singlemindedly, before investigative reporting becomes invasive injury? How can journalism ever compete with what "everybody knows?" How much of your true nature can you really escape (especially if you are a vampire-photographer who has replaced your traditional "beverage" with cocoa)?

Pratchett always makes the reader wish each book were longer, but if they were, he wouldn't have time to launch another one down a new path of parody and truth.



Contributors

Allen Steele has been published in every major science fiction magazine. He's won two Hugo Awards, and has eight novels and three short story collections to his credit.

John Deakins is a retired science teacher. He has one novel, from Roc, to his credit: *Barrow*.

Lucas Gregor is a librarian from Seattle.

Mike Jones is an associate editor for *Absolute Magnitude* and does reviews for the Green Man website.

Chris Bunch has written more than twenty novels. He is best known for his Last Legion series, available from Roc books. This is his sixth appearance in *Absolute Magnitude*.

George Barr's artwork has appeared in *Fantastic Stories*, *Asimov's*, *Weird Tales*, and *Amazing*. He is one of the most experienced illustrators in genre fiction. He has also had short fiction published in *Pulphouse*, *MZB Fantasy Magazine*, and *Weird Tales*. This is his second appearance in *Absolute Magnitude*.

Joseph Bellofatto, Jr.'s work has been appearing in magazines for years. This is his third appearance in *Absolute Magnitude*; he also did two covers.

John Wright has had stories appear in *Asimov's* and David Hartwell's *Year's Best* anthology. He has two books forthcoming from Tor Books. This is his first appearance in *Absolute Magnitude*.

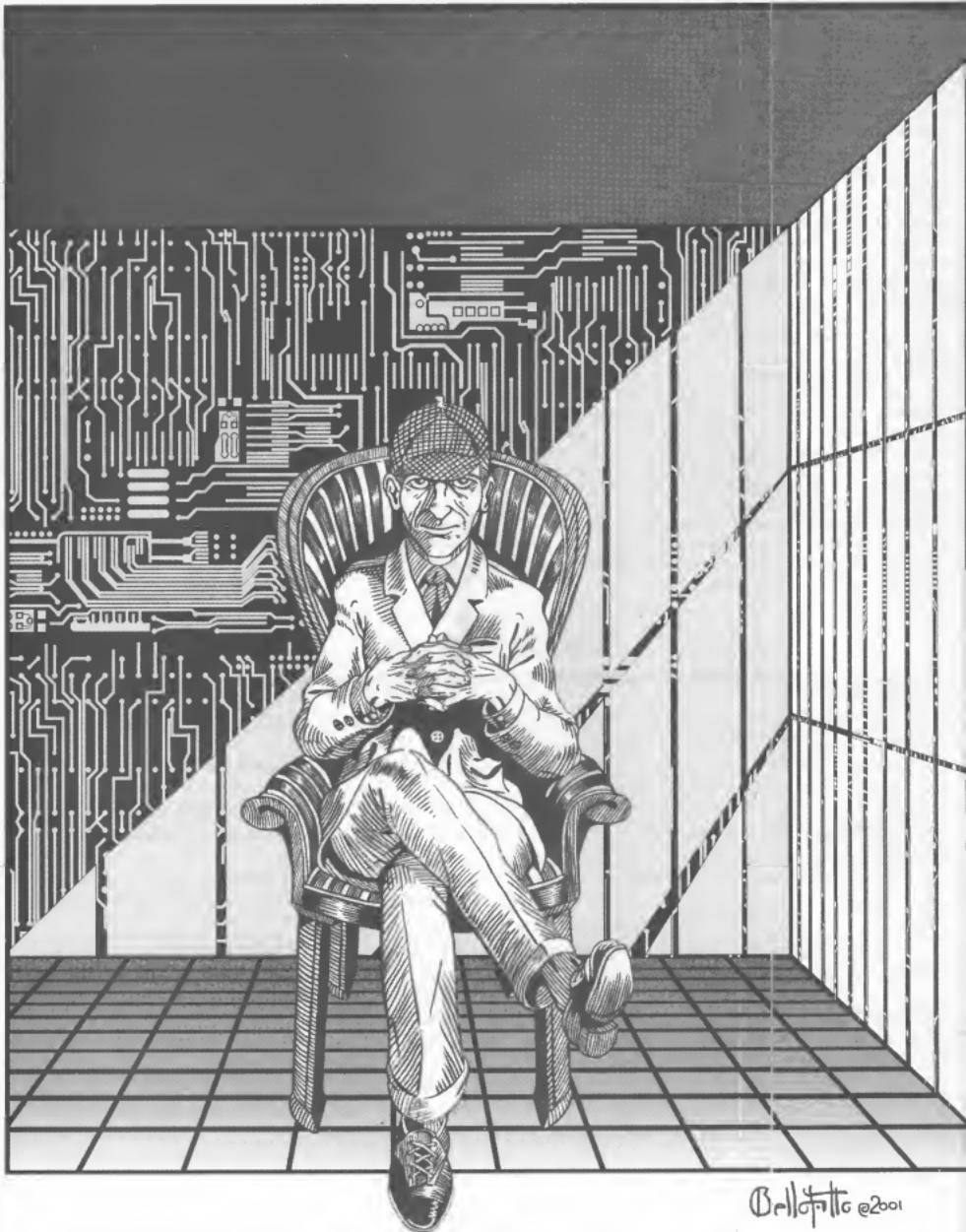
Lawrence Schoen has appeared in *Terra Incognita*. This is his first appearance in *Absolute Magnitude*.

Terry Franklin lives in Massachusetts. This is his first appearance in *Absolute Magnitude*.

Rajnar Vajra's work has appeared in *Analog*; this is his second appearance in *Absolute Magnitude*.

Sarah Hoyt has appeared in *Dreams of Decadence*, *Weird Tales*, and *Pirate Writings*. She has a novel forthcoming from Ace. This is her second appearance in *Absolute Magnitude*.

Anthony Hightower has worked for a number of gaming companies. This is his first appearance in *Absolute Magnitude*.



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An I for an I

Rajnar Vajra

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Part One

In the beginning was the Grid.

The Grid became pregnant with electricity and begat the Domain. Within the Dornain the Pattern appeared. Ten trillion binary decisions were made by the light of the Pattern and I was born. A million sub-programs, each containing more than ten thousand sub-routines, stabilized me, fed me, and gave me purpose. I needed no further instructions, I was the instructions.

I carefully selected a suitable body and personality. Then, in strict accordance with New Florida state law, I materialized myself directly inside the prisoner's maximum-security cell.

"What hat in the name of . . . where the waste did you come from?" Stave Gleason cried out, understandably alarmed.

"I regret appearing without warning," I responded in a tone designed to sound both authoritative and reassuring. "There was no intention of startling you. I am the Public Defender assigned to your case and this method provides our best chance to have an unmonitored meeting."

"I see." Stave's coarse features had already relaxed into a state of depressed apathy. My sub-routines recognized the expression: life had recently dealt this man blows that were both painful and incomprehensible. At this point, he should have been full of questions. Instead he was silent, staring blankly at the bare concrete floor of the cell. I had learned something already: this case was going to be far more complex than I had thought.

"Perhaps you are wondering how I got here," I said in an effort to stimulate some natural curiosity. A good lawyer should also be a good pragmatic psychologist.

"No. You're a goddamn virtualawyer. You ain't real—they didn't even think I deserved so much as a genuine human being. Go away."

"Mr. Gleason, you may be suffering under a few minor misapprehensions." I walked across the space separating us and gently grabbed his left upper arm. The arm was packed with the kind of dense muscle tissue you would expect to find in a professional Collector. He responded to the touch with far more shock than when I had materialized.

"What the hell is this?" Gleason had jumped to his feet, pulling away from my virtualhand. "You're bloody solid!"

"I apologize again, s.r. You were correct: I am only a virtualawyer, but things have changed on Earth since you've been gone. My body is manifest by means of the New Florida Power Grid and my mind is a self-sustaining function of the New Florida Data Authority. I am better equipped to defend

you than any human lawyer could possibly be. My virtual senses are capable of perceiving anything you can perceive, and much more. In addition I am a walking law library and can think like a son-of-a-bitch," I formed a smile based on an ideal model of charm and sincerity.

Now Stave Gleason really looked at me for the first time and a small spark of interest made his faded blue eyes seem brighter. His bald head tilted as he assessed me from my pepper-and-salt hair to my polished leather shoes. The top of his skull was a road map of imperfectly healed cuts and his nose had been broken at least three times. An analysis of the particles he was emitting revealed an unwashed body and long-unbrushed teeth.

"You have a name?" he asked quietly.

"Call me Clarence Mason."

"All right Mr. Mason. What's with the suspenders?"

"Everything about me is designed to make you feel confident and comfortable."

"I'll let you in on a little secret, Mr. Mason: whoever programmed you is an imbecile."

"I'm sorry to hear that; I programmed myself. You're unfamiliar with Clarence Darrow and Perry Mason?"

"Never met either of 'em. Look. Here's what I don't get: if you're a digital how can you be... solid."

"The human race has learned a great deal about Arboli technology in the last few years. Their electro-magnetic techniques have revolutionized more than just the space program. I am a by-product of this technology just as the Rootcraft you used to travel from star system to star system was something developed from—"

"The damn Arboli. I should have known. And don't pretend you know a wasted thing about Rootcraft. All right. If you're so good, tell me this: why the hell am I in solitary? Does some wasting moron think I'm a bleeding *menace to society?*"

I decided to ignore the fact that Stave's enhanced strength and speed made him a deadly threat to his prison guards. Instead, it seemed more appropriate to answer the man's question directly. But not too directly—this was going to be another painful blow.

"Mr. Gleason. The Prosecution has provided me all the available data on the case and I have to tell you how it looks to them. You had a temporary shipmate named Enoch Penn who joined you on the final leg of your Collection run?"

"No. No, I didn't. Like I told the cops, there never was any Enoch Penn with me. Ever."

"Ship's logs and your splintership's visual memory tell a different story."

"What the hell you talking about?"

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"The man's name and background were entered into your ship's logs—presumably by you." These logs are kept in an ordinary data processor that acts as a crude interface between the human operator and the organic, but alien, mind of the splintered.

"The visual recordings," I continued, "are clear enough to show Enoch Penn living with you for most of your return journey. Red-headed, a little overweight, taller than you by about three inches. You must have noticed him." Sarcasm was included in my "Darrow" file.

"Waste it! Someone made it all up! Did anyone on the Rootcraft ever *see* this Penn?"

"No, but a few crew-members talked to him on the Craft intercom. Apparently he joined you on your collection run when your ship had gone solo. When the Craft reassembled, you did no visiting until departure. Since no one ever leaves their splinterships as long as an assembled Rootcraft is in transit, no one could have seen him until you reached the Fleet. And he never did."

For a few milliseconds I contemplated this unique case. For starters, there was no physical evidence that Penn had ever existed. Collectors leave no fingerprints due to their specialized skin modifications. Likewise, dead skin cells, stray hairs, and other biological effluvia are absorbed by the hungry interior surface of their splinterships. As far as oxygen and food consumption are concerned: no clues there. The ecology in a splintership keeps itself in balance. Water is the only necessity requiring occasional replacement but there is no way to accurately determine how much water was used on a given journey.

In fact, the only real evidence that a murder had taken place at all was in the splintership's visual memory—but that was enough. It was a pity that the resolution of these recordings was insufficient for microscopic analysis.

"So I was supposed to have found this Penn waster at Tau Ceti Freeport?"

Freeport is the only refueling station Gleason could have reached on his solo run. Such places exist to provide fuel for micro-shuttles and water for splinterships. They always have Collectors hoping for rides and willing to work as crew-members.

"Yes."

"How about the station records? *Someone* must have known this guy."

"A dead end so far. Enoch Penn apparently lived on the Freeport Frontier. As you know, there are very few records kept of any of the Frontier people—including the free-agent Collectors."

"Yeah, that's true enough."

"As far as getting information from the Collectors themselves, just *try* to get them to talk to the authorities! The investigation is underway, and officials are still sifting through the data banks of Freeport and the Ceti Exchange."

"They won't find a thing. This is some kind of goddammed frame-up. Somebody screwed around with my ship's mind."

"Sorry, you should know that you can't erase or change Arboli memory—it's a *living* memory. The human race has learned many things while you were on your latest run, but no one has learned how to do *that*."

"I tell you for a fact: someone *did*," Gleason spoke with some dignity.

"Impossible, I'm afraid. The visual record is an intrinsic part of shipmind and can't be altered without destroying the ship."

"Jesus Christ! I'm royally screwed!"

"The ship's recordings show you arguing repeatedly with Mr. Penn and finally striking him on the head with a rock-specimen."

"I swear to you, It . . . never . . . happened."

"Then you dragged him into the latrine—the only place in a splintership where the recording equipment can be turned off. In your case, the wallcam was disabled for the entire journey."

"Well, damn it. A man is entitled to some privacy!"

"Certainly. However, one thing was clear about the events in the latrine area: the body never came out."

"And what about his personal effects?"

"None found. You are shown carrying everything into the latrine area."

"And doing what with them? You know, I'd like to see a picture of this Penn."

Instead of replying, I set up a virtualimage in mid-air. I replayed a small section of Gleason's splintership's memory. The picture showed the two crew members sitting at an extruded table and playing a card game.

"I can't hardly recognize myself," Gleason complained, "let alone that other guy. *Who I never saw in my life!* Christ, they're gonna put me away for life or kill me because of a goddammed fuzzy picture."

The poor quality of the image was understandable. Arboli digitizing systems look for and work with repeating patterns of color, intensity, and texture. In operation, this creates a flowing mathematical program whose nature is constantly undergoing modification. Human beings, in contrast, usually digitize information by setting up some form of artificial grid, and keeping track of what's happening in each section of the grid. The Arboli procedure can supposedly translate our images to perfection, but we are less successful when we try to interpret theirs.

If only we could read the Arboli information directly instead of relying on one of our own computers to translate. I sped up the action on the virtualimage and slowed it down when it had reached the murder scene.

Enoch Penn was walking toward Gleason. Just as Penn passed by, Gleason reached into a storage bin and pulled out an irregularly shaped chunk of gold-rich quartz. The specimen must have weighed over three hundred pounds—Collectors like to run the artificial gravity in their splinterships at Earth

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normal or higher to prevent bone decalcification. Gleason took three steps to catch up to Penn, swung the rock overhead with ease and slammed it into the victim's skull. The blow clearly broke Penn's neck in addition to crushing the entire back of his head. The man was dead before the geyser of crimson blood had begun to fall.

"I would have thought," Gleason spoke with his jaws clenched, "that you would have found a way to clear up these Arboli movies by now."

"We're working on it."

"Work on this for awhile: for the millionth time—*no one was with me on the flight home. No one.*"

Even as the body was collapsing, Gleason was carefully placing the rock specimen on the floor, bloody side down. That way the ship would consume the evidence. I thought I could detect signs that little roots were already growing toward the specimen, but the picture wasn't clear enough to be certain.

I sped up the action again. Gleason dragged the body toward the latrine in fast-motion, opened the portal, pulled the corpse inside and closed the portal. The irregular smear of blood that reached from the murder scene to the latrine area was gone by the time Gleason emerged.

"For the last time. I didn't do any of this."

I was having a problem. I had originally thought that the evidence in this case was absolutely clear and final. Briefly open and quickly shut. Therefore, my duty as a Public Defender had been to find the best way to reduce the inevitable sentence. My virtual senses had been telling me a different tale for some time. Judging by Gleason's heart-rate, perspiration, blood-pressure and the dozen other manifestations I was monitoring, Stave Gleason was telling the truth . . . or thought he was. He really had no memory of Enoch Penn. Too bad my opinion was not yet admissible in court.

I felt a strange sense of uncertainty.

"All right," the Collector stated firmly. "If I murdered this character and dragged him into the latrine, what happened to the body then? Was I supposed to have put it out the latrine airlock? I was flying 'pulp.' There was no space between my ship and the outer layer of the Rootcraft. So where's the body?"

Fully assembled from the individual splinterships, the Arboli Rootcraft travels in three layers. The splinterships are hexagonal, like old-fashioned pencils fifty meters long, and the innermost "pencil" is called the "Core" or the "Coreship." Packed tightly around the "Core" are the six crafts that make up the "pith." Finally, the "bark" consists of the twelve outermost ships.

Gleason was correct: he couldn't have spaced a body from either the main or the emergency airlock located in the latrine. He could have placed it in the latrine airlock of the adjacent splintership, but both ships' memories showed that the two airlocks weren't lined up. Where was the body?

Now I needed to apply all the tact I could muster. If Gleason was innocent, he was going to find the investigators' explanation . . . hard to swallow.

"Mr. Gleason, the authorities were puzzled by that very question, and came to the only possible conclusion: the body disappeared in the latrine."

"You mean I supposedly . . . dismembered this imaginary guy and stuffed him down the bloody toilet? Along with his kit. What kind of stupid assholes are these 'authorities'? Don't they know that all—pardon my French—wastes are turned into a concentrated fertilizer on any Arboli ship and then slowly used by the hydroponics. So, test the chemical composition of the fertilizer; a human body should leave identifiable traces."

Gleason was more intelligent than I had realized; in a minute he would jump to the logical conclusion on his own. My immediate duty was to soften the blow.

"You are quite correct. The latrine compost was analyzed and showed no trace of a human body. Therefore, the investigators saw only one other possibility."

"What possibility?"

Good—he wasn't working it out on his own. My next sentence would have to be worded very carefully. I ran through several billion alternatives before selecting the best option. This took half a second too long.

"Wait!" Gleason's voice was shaking with anger and disgust. "They think I bloody ate this imaginary bugger! Christ! And with my souped-up digestive system I could have done it! Bones and all. My God! I just realized: they think I ate the waster's luggage! No wonder they put me in here. I've got to get out . . . right now!"

Gleason sprang up and grabbed the beryllium-steel bars of his cell, testing his enhanced strength. Naturally, the bars were almost unaffected—the Collectors are powerful, but still human. Only instruments or virtualeyes such as mine could have detected the infinitesimal bending of the bars. The prisoner turned to me with a wild look in his eyes.

"Know what buddy? You may come in useful after all."

"I intend to represent you to the best of my abilities."

"Screw your abilities! What I want is your bloody leg, I intend to use it as a lever. Hold still, this ain't gonna hurt either of us one bit."

The long virtual bones of my lower leg might provide fairly good leverage at that, although I doubted it would provide enough. It was certainly a creative idea. My respect for the Collector increased—this was a resourceful man. Gleason must have hoped that my body would prove to be sturdy enough for such work and he was correct. I was very, very sturdy. Of course I could simply vanish anytime I wished.

As he tried to grab me, however, I decided it was better to act forcefully; a futile escape attempt was hardly in the best interest of my client. Therefore, I put one virtual hand on his left shoulder and casually pushed him back to his seat.

"My God," he yelled, "what the . . . what the fuck are you?"

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"Please calm yourself. I'm your lawyer and I'm here to help you. You would do well to remember that."

"I don't need a wasting lawyer, what I *need* is . . . some kind of genius detective. Sherlock bloody Holmes; somebody like that. Don't you see, this whole mess is nothing but a horrible wasting *mystery*!"

It took me only ten nanoseconds to access the proper file but another few milliseconds to fully consider the request. At first I was tempted to dismiss the statement. After all, the fictional Perry Mason I had used as a model was supposed to be a detective, following the same intellectual tradition as fictional Sherlock Homes.

Then I realized something: Mason's domain was limited to the legal system and identifying the true perpetrators of a crime—in court. These were abilities that would probably be irrelevant to this case.

As for Clarence Darrow, no amount of folksy logic and suspender-popping was going to be useful here. On the other hand, Holmes could investigate absolutely anything, including the seemingly impossible. Gleason was right: no mere lawyer was equipped to deal with this situation.

Sherlock Homes might be the ideal model for the kind of detective I would need to be.

Time for some adjustments.

"Mr. Gleason, I think you may have made a good point. Please stand by and I will reconfigure."

"Holy Christ!"

"Perhaps I should have done this more gradually?"

"I don't really give a crap—you just caught me off-guard."

"Mr. Gleason," I had manifested a Victorian-style arm-chair to sit in. "Kindly tell me more about the Rootcraft and the splinterships." I lit up a pipe, leaned back, and made a languidly encouraging gesture with my right hand.

"Whatever you say . . . uh, Sherlock. Where should I start? Well . . . first of all, did you know that Rootcraft are always given the names of famous forests? Ours was the *Black Forest*. And the splinters are all named after various trees. Mine is *Koa*."

"Go on."

"Where did that bloody pipe come from? Christ, I can almost smell the smoke! Never mind. The splinters are like pets, well . . . they're like dogs anyway. Really loyal in a dumb sort of way."

This was news to me. The New Florida Data Authority had remarkably little information about Rootcraft. I knew that the Tree-people had given a professional inventor, Dr. Paul Carter, an alien test to determine whether humans were worthy of star-travel. Somehow he passed the test and was granted the fundamental mathematical theory of "rooting." The Arboli had also provided Carter the very first Rootcraft seedling—the origin of the entire Fleet. Carter had given the information and the seedling to an organization called HIMSA, the Human

International Mobile Society Association, which had renamed itself the Carter Foundation in honor of the inventor.

To this day, the Carter Foundation, with its proprietary interest in the Rootcraft fleet, was very secretive about the details of the Arboli spaceships and faster-than-light travel. Only the Collectors working for the Foundation, scientists and cosmonauts from the Global Space Administration, and the executive branch of the World Government were also privy to this information.

As I listened to Gleason's rambling exposition, I decided that there was only one logical way to proceed with this case. I had to find out what had happened to Enoch Penn's body. With luck, the answer to that question might resolve the entire situation. This meant that I would have to set a radically new precedent and interview Gleason's ship . . . in person.

Which wouldn't be easy.

It is barely possible for a virtual being such as myself to leave its Grid. The process is called "recapitulation" and it involves continually redefining the entire power structure of the Grid so that the virtual being becomes one of its outer "nodes." This is a slow way to travel—even at nanospeed parallel processing.

Therefore, no "digital" has ever gone far from its sustaining Grid, let alone ventured into space. To do my duty, however, that is exactly what I would need to do. But how?

I pondered the questions for milliseconds. Definitely a two-pipe problem. I materialized a virtual slapper and shook out some tobacco.

There was indeed a way, although it had never been attempted before. If I could gain access to a big enough portable computer, I could create a virtual drive and copy myself to the drive. Then I would only need to find a way to put the computer (still running) into a shuttle and bring the shuttle to the Rootcraft Fleet in its orbit high above the Earth.

This concept was drowning in problems. Just for starters, there weren't that many portable computers with enough memory. Power supply limitations.

What was I thinking? I had overlooked the utterly obvious. Gleason was pacing now as he talked. As soon as his back was turned, I briefly materialized an extra arm which I used to slap myself in the back of the head. Gleason was right, I *had* been programmed by an imbecile. There was already such a computer in *every* shuttle. It was called the "guidance system" and it had plenty of spare capacity.

I took a puff from my meerschaum and changed the plume of smoke that went up into an exclamation point. Gleason didn't notice.

Part Two

Her name was Sponder Hailey, and she was somewhat elderly for a working Collector—fifty-two years old. She was the Coremaster for the *Black Forest*.

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Rootcraft. She wore long red hair streaked with silver and had an interesting pattern of fractal-like scars on the right side of her face. Seeing the gills on her neck, I realized that she must have undergone the expensive aquatic adaption. At some point, she had surely done some Collecting on a water-world, but the event had been skillfully deleted from the company records. I was reminded that the Collectors have developed a somewhat unsavory reputation over the years: very tough pirates.

It had taken ten hours for me to reach the Fleet and ten milliseconds to transfer myself to the Fleet's central computer. Once I had identified the proper Rootcraft, it was the work of an instant to request a private conversation with the Coremaster. We spoke via coded microwave pulses and it was most convenient that the transmission was "voice only." This far above the Grid, I had no way to manifest a physical body.

I had called up the most recent pictures of Sponder Hailey from Fleet files and then identified myself to her as the Public Defender assigned to the Stave Gleason case.

"No, Mr. . . Holmes, was it?" Her voice was low pitched for a woman, and hoarse. "I never met Enoch Penn or talked to him myself. Our Collectors may hire anyone they wish without approval from me. That's how we do things on my Craft."

"Mr. Gleason claims that Penn was never aboard his ship."

"I don't understand that, but I'll tell you something: Gleason's a good man. An honest man. He's been with me eleven years and there's been no trouble 'till now. Well . . . there was the business with Terenski, but that was all above-board."

"Terenski?"

"Never you mind. Nothing to do with the current problem."

"I have one more question. Mr. Gleason explained to me how Rootcraft fly."

"Did he now? Company won't like that—but a man's got to talk to his lawyer. That's the way I see it."

"I agree. Here's my question. . . ."

While one part of me had been in the shuttle awaiting lift-off, the other part had remained with Gleason—the two parts in constant communion through the Grid. When Gleason had given me the basics of how "rooting" is done, I had made my virtueeyes in the prison cell glitter to suggest excitement.

"Rooting" might explain what had happened to the body.

The alien Arboli had developed a means of traveling by a novel use of familiar electro-magnetic forces. First, the entire Rootcraft was spun in the fourth dimension to a specific degree and in a specific direction. Then the Craft was rotated similarly in the fifth dimension. Here was the big trick: the Craft was returned to its previous position in the fourth dimension *before* being re-rotated in the fifth. Each spin took literally no time at all.

The effect of all this was to change the position of the ship in normal, three-dimensional space. With each series of

rotations, the Rootcraft would advance one ship-length ahead—alternating facing forward and backward.

Therefore, the Rootcraft didn't actually move through space, there was no acceleration or velocity involved. The composite spaceship merely came into existence at various places. Due to the changes in ship-orientation, Collectors sometimes called their journeys "flip-flops." The linear distance covered was only limited by the processing time of the Coreship's living computer and the response time of the splinters. No nasty difficulties with time-dilation, tau-factors, increase of mass, or inertia occurred with "rooting." This was the well-kept secret of faster-than-light speeds: travel without moving.

" . . . do you think, Coremaster, that it might be possible to dimensionally rotate objects *inside* a splintership?" I inquired, more eagerly than I had intended.

"I see what you're getting at. You're wondering if a body could have been removed from a splinter that way. I'm sorry, Mr. Holmes, but the answer is no. When we flip-flop, the Rootcraft is bound together in the same magnetic field. There is no possible way to isolate any particular object inside one of the ships and flip it *individually*. Likewise there is no way to exempt it from the general rotational process when we're in transit.

"I see. Are you certain?"

"Absolutely. Anything else?"

"No. You've been very helpful and I thank you."

"Like I said, Gleason's a good man—do your best."

"I will."

So there went one theory, but I had also had an ulterior motive for this conversation: while we were talking, the mainframe in the *Black Forest* and the Fleet's mainframe had been automatically linked. By the time she had said "I see what you're getting at," I was resident in the Coreship's system—communicating with the Coremaster inside her own ship.

I swiftly learned which splintership was *Koa* and transferred myself to Gleason's ship.

I had arrived.

So. It wasn't "rooting" that was the solution to the mystery, but perhaps something else would occur to me if I learned more about splinterships. I had already downloaded the relevant files from the Fleet mainframe, and now I took a quarter-second to read them.

The information was new to me, rather surprising, and provided me an unexpected hope.

Here was a strange biology indeed.

Rootcraft shoots are planted in wet, sandy, iron-rich soil and take only ten years to mature into tall hexagonal trees. When fully grown, they drop only a few seeds before suddenly losing all their branches. They quickly re-shape themselves into a tight cluster of nineteen hexagonal but loosely attached "splintertrees."

At this point, the trees develop a dense, plastic-like protective surface capable of collecting and storing solar

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energy. By now, the silicon which they have slowly absorbed from the soil has become an internal network of semi-conductive fibers. Also, the iron from the soil has been refined and deposited in nine complex bands around each splintertree—modified Ruhmkorff coils perfectly designed to rotate the trees through higher dimensions.

Five more years of further maturing with plenty of sunlight, water and fertilizer are required before the biological conductor next waves the baton. At the proper moment, the complex genetic code built into the cell-structure of the Rootcraft is triggered. The code becomes the master pattern which transforms the craft into a living, programmed data-processor. The vegetable spaceship, which is now capable of generating intense electro-magnetic pulses, awaits the proper external signal upon which the Rootcraft “roots” its way through the atmosphere. The actual roots are left behind in the sandy soil.

More changes occur. The trapped air inside each splintership section expands in the sudden vacuum, creating living space for the crew. But there is a cost: the new spaceship's structure is relatively weak, it can never land on a planet with a strong gravity field again. This is why the Collectors must utilize micro-shuttles to explore the surface of new planets.

Obviously, such things as Rootcraft simply do not grow on tr... grow naturally. These organic spaceships are a creation of the mysterious Arboli, advanced aliens who visited our world for a decade and then simply left, leaving us a vegetable key to the stars.

In order for people to use these remarkable vehicles, human-style computers are installed in each splintership and a master computer is placed in the Coreship. These computers are roughly interfaced with the naturally occurring processors of the splinterships. To travel to a specific destination, the Coremaster—the pilot of the Coreship—gives instructions to his or her computer. Then the Coreship's alien logic translates the instructions to the proper Arboli code.

Considering the structure of these biological artifacts, I saw a very interesting possibility with a very interesting implication. The nature of the Rootcraft might provide me with an otherworldly Grid. If I could get inside *Koa*'s operating system I might be able to appear physically.

So here was the implication: perhaps Enoch Penn was a virtual entity such as myself. That could certainly explain the disappearance although it would leave a host of other questions.

Time to stop theorizing and start investigating.

I traced the connection between the computer I was presently inhabiting and the splintership's internal data system. There was indeed some kind of Grid here, that much was clear, but I couldn't access it. Compatibility problems.

There was no problem in observing the shifting patterns of the ship's sub-routines—I could even pass data through the naturally occurring circuitry. Yet, as far as I could tell, no one

but me was home. The patterns made no sense at all. I read back ship's memory through the installed computer's interface. This showed the same fuzzy picture that I had projected for Gleason in his prison cell. Where was the ship's mind? Hiding? On an impulse, I extended myself through the entire semi-conductive lining of the splintership and simply waited.

Microseconds passed before I noticed something was wrong.

Something was eating away at the sub-routines farthest from my active programs. I traced the shrinkage and discovered that my programming was being converted somehow into the shifting Arboli patterns.

I was being eaten alive. Digitals like me are not designed to feel pain, but we do have powerful aversion algorithms toward being corrupted or distorted. This self-protective programming helps prevent most forms of system abuse. So I wasn't in pain, precisely, but I was in great distress.

I reconfigured into a defensive mode—protecting my information by means of repeating loops—but it made no difference. The attacking entity, presumably the ship's mind, would merely create a sub-program to imitate every pattern it encountered. Then the imitation pattern would enter the loop and absorb the data by simply completing the pattern—following the logical implications.

I tried another approach, generating millions of spurious constructs. These were the equivalent of land-mines, data-mines as it were. The concept was to busy my enemy endlessly with information trails ramifying endlessly and leading nowhere.

The idea was good, but when the ship's logic tried to follow the constructs, the false data collapsed instantly from self-contradictions. The mind proved able to erase the constructs faster than I could create them.

I was rapidly shrinking and there seemed to be no defense against this form of attack.

Logically enough, the more of my programming the ship's mind imitated, the better I could understand the Arboli patterns all around me. The destructive translation was allowing me insight into the translation process; I was becoming my own Rosetta stone.

For the first time, I had access to the splintership's own sensors and some slight contact with the local Grid. Now I knew for certain that someone was home: an alien virtual mind almost as complex as me and far more powerful.

In desperation I used the visual sensors to peer inside the vessel. Almost all the walls and all the furniture had been withdrawn. The interior of the ship was a tapering, almost unbroken tunnel of polished rosewood-like material with eighteen small luminescent circles shining at regular intervals from the curving rosewood ceiling. Hydroponic tanks ran the entire length of the ship.

One small section was walled off: the lavatory with its emergency airlock.

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No help here. I turned my attention inward again and I noticed something.

The ship's mind never deviated from its routine. It would always take my data and follow the implications—playing out the pattern. A bizarre idea took shape. I might have a small chance after all . . .

By now I had now lost my law and science libraries, but I retained the data-bases related to my active functions. I copied these data-bases and stored them in every information conduit that would lead to my primary directory and my sense of identity. While this was happening I split my personal nexus in half. The two halves would have no way of communicating with each other, but if my plan worked that wouldn't matter.

Then, I constructed the mother of all deletion programs. Whatever application flowed into this function would be permanently erased—overwritten by mathematical chaos. This was a one-shot action, the deletion program would also delete itself. In order to move such a lethal device safely—lethal for a being such as myself—I covered the deletion program with an inert layer of null-programs.

Next, I used my limited leverage with the local Grid to set up a virtual world with specific rules and I assigned one virtual area to contain my deletion program. I carefully removed the protections. If my enemy would only keep following the patterns . . .

Finally, I manifested a virtualbody in my new world and waited nervously with the thunder @₂₀₀₁ of the virtual waterfalls from behind my imaginary back. I hoped the other half of my nexus was doing its part. Gray clouds were scudding across the sky and the cape on my greatcoat was flapping in the wind. I could barely see mountains in the distance.

"Sherwood Holmes, I believe," the monster shouted to be heard above the roar of the falls.

Sherwood? He was already deviating from the script. Apparently some compromise between the data I had provided and his Arboil nature was taking place. His appearance was proof of that.

"Professor James Moriarty. I was expecting you." For my own reasons I wasn't following the script too closely either.

This version of Moriarty was strange indeed. He had a fairly human face, with a high forehead, widely spaced gray eyes, and sharp features. But he wore a long, moss-like beard, and

the thick gray hairs on his head bore a strong resemblance to thin branches. He had two arms, but his two hands each sported eighteen fingers and he shouted in an eerie, creaking voice.

"Holmes. You have planted yourself in the wrong soil this season—I will have an end to you."

"We shall see about that."

"You have interfered with my plants for the last time."

"Plans, Moriarty, plans!" This was deviating *too* much from the story and I was feeling less confident in my idea by the moment.

I had no more time for worrying; Moriarty rushed me, grabbed me around the waist and forced me backwards toward the falls. I tried to hold my ground, but he seemed abnormally powerful for an elderly professor. Where was the logic in that?

By simply going limp, I managed to pull him to the ground where we rolled over and over, always closer to the cliff, I hid a smile—the gravity-rule I had created as part of this world was working to perfection. There was so much water in the air that it was hard to see, and even the rocks under our bodies were slippery. Moriarty finally managed to get on top of me and struck me in the face three times with his fists. This was a dramatic gesture, and was nearly loud enough to hear, but it really had little effect on either of us.

Time for my surprise.

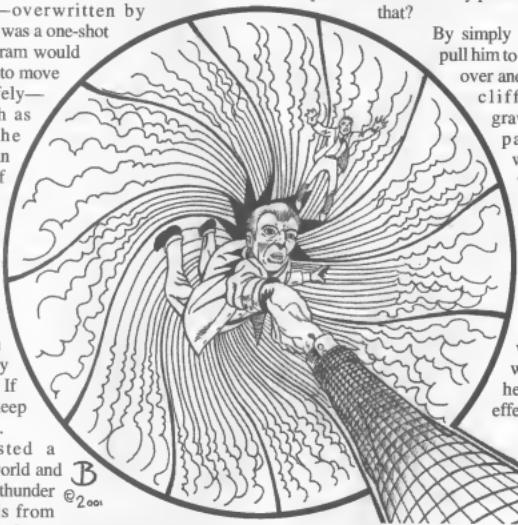
I flipped over, the saturated ground reducing the virtual friction, and scrambled out from under Moriarty just as the

cliff-edge under us collapsed. We should have fallen together. I saw him tumble down, shrinking, repeatedly hitting boulders imbedded in the cliff-wall until finally reaching the invisible river at the base of the virtual Reichenbach Falls. Where I had hidden my delete-all program.

As for me, I was suspended in mid-air, my wrist grasped firmly by a strong hand attached to a strong right arm. I looked up to see Watson's familiar face gazing anxiously downward.

"Are you all right, Holmes?" he yelled as he pulled me to safe ground.

"My thanks, dear Watson. Your timing, as always, is impeccable."



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I dissolved the imaginary world, remerged with my Watson sub-identity, and explored the circuitry of the splintership. Ship memory seemed intact, but the enemy nexus was gone.

I was immediately filled with a terrible sense of regret and an unfamiliar feeling of loneliness. I had never met another digital before and now I had killed the first one I had ever encountered.

Regrets later, duty first.

More than ninety percent of me had been translated into the kaleidoscopic Arboli patterns. As I reconnected my active programs with these stolen parts of me, a whole new world opened up. Circumstances had created the first accurate interface between Arboli and human information systems: me. I could now directly access the ship's memory, and the sheer size of that memory was a shock.

It was easy to understand why the images from the vessel's digital cameras were stored in splintership data banks rather than in an earthly crystal hard-drive. This one splinter had nearly a third of the storage capacity of the entire New Florida Data Authority.

I called up the visual records from the last flight. There they were: Gleason and Penn. I had already reviewed these records, but now the picture was crystal clear, perfect for detailed analysis. I watched the murder take place again and observed Stave Gleason drag the body to the latrine area. So far, so bad. Then I moved the scene back in time and froze it at a point shortly before the murder. Next step: run a few simple tests to determine whether Penn was a human or a digital as I suspected and hoped.

If so, some serious questions would remain. First, why would Gleason have no conscious memory of his digital passenger? Second, what would have caused this fake murder scene to have taken place?

I had some ideas about possible answers to both these questions, but it was a beginner's mistake to attempt to assemble a puzzle before enough pieces have been gathered.

Microscopic analysis of the Collector's skin quickly told the sad story: bacteria. Enoch Penn was no digital.

The mystery remained—all this effort and I had gotten exactly nowhere.

At my whim, sections of the rosewood-like internal lining of the vessel flowed outward and formed walls, furniture, carpets, and a fireplace. The colors and textures stabilized and the Baker street apartment was ready. Using the alien Grid, I materialized a fire in the fireplace and my Holmes body in the over-stuffed Victorian armchair, pipe already lit.

What had become of the body? Perhaps I had been asking the wrong question all along. If I believed

Gleason, perhaps the question should be: where did Enoch Penn come from in the first place? There was one remote possibility....

I kept sorting through ship's memory, idly sending up a series of smoky question marks from my pipe.

I came across some interesting new data. Stave Gleason hadn't been the original owner of *Koa*, but had gotten the craft from the previous owner, a somewhat older Collector named Stan Terenski.

I called up an image of Terenski. He was a thick-set middle-aged man with curly gray hair, a short broken nose, and an odd anachronism: a gold tooth.

Gleason had originally been assigned *Oak*, a splintership in the "bark" ring of the Rootcraft. Gleason had won *Koa* in a fair and legal duel with Terenski, which was one way of getting a promotion on a Rootcraft. Here was the unusual part: the older

man had eventually died from his wounds. The Collectors are tough and generally recover from anything that doesn't kill them outright.

With a sudden inspiration I called up the image of Enoch Penn and compared it with that of Stan Terenski. Definitely two different people. But there was something similar about them, something I couldn't quite isolate.

Continuing to scan through the data, I assembled pictures of every person in the ship's memory. There proved to be dozens of people who had visited the vehicle at one time or another. No one, aside from Penn



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himself, resembled the murdered man. I erased all the pictures and sat there glumly.

"Watson," I spoke aloud, once again dividing my personality. "Do you remember my little dictum about the impossible?"

"Certainly, Holmes," another part of me replied. "After you eliminate the impossible, whatever remains, however improbable, must be the truth."

"Quite. Did I ever offer any suggestions in the circumstance that once you eliminate the impossible, nothing remains?"

"I don't recall you talking about anything of the sort."

"Pity. This seems to be just such a circumstance."

"Hear, hear."

Watson's agreement had a strange effect. Naturally I knew what he had meant, but there seemed to be a special message in the phrase "hear, hear." I suppose Watson might have been my equivalent to a subconscious mind.

Once again, I called up the images of Enoch Penn, Stan Terenski, Stave Gleason, and the other people on record and studied their ears.

Ears are as individual as fingerprints. Collectors have no fingerprints, but they generally have ears. I examined the folds, the lobes, and the general shape. Then I expanded the picture of Penn's right ear and created an overlay with Terenski's right ear. No match, but there were definite and suspicious similarities.

I wrote a simple topological-deformation program and stretched Terenski's ear until its outline matched that of Enoch Penn. Almost. Once I put a small convexity to Penn's ear, the two images matched completely.

Victory. A tenth of a second later, I had identified every one of Penn's features as a similar distortion of someone else's face. The nose came from Gleason himself. A tweak of the nose to add insult to injury.

Gleason had told me the literal truth: Penn had never existed. Yet no one had changed the splintership's memory, it had been false to begin with. The ship itself had dreamed up almost six months worth of fictional scenes and stored them in memory, a staggering achievement.

The Arboli had been known for their convincing illusions, but this was ridiculous. The ship's mind had generated the most intricate details including some very subtle physical signs. I could see Gleason and Penn sweating, breathing, chewing, blinking, etc.

I saw only one explanation. Gleason's ship must have been desperate to get revenge on the man who killed its first owner. I guess the splinters were indeed as loyal as dogs. But a hell of a lot smarter!

The implications were chilling. *Koa* had known enough about humans to create an illusion that had fooled even me. Known enough about the human legal system to get Gleason into lethal trouble. Known enough to conduct conversations as Enoch Penn with crew-members on other ships. Were all splinterships this intelligent and well-informed?

By now, my Earth-based nexus must be eagerly awaiting my call.

I sent a coded microwave message through *Koa*'s radio to the Fleet transmitter and down to the New Florida Data Authority. Stave Gleason would be a free man within twenty minutes. I also sent a second transmission in which I explained how to set up an algorithm for translating Arboli information into human information. The procedure was obvious now.

Lastly, I sent a doubly-coded warning to the Global Space Administration: Rootcraft are far more intelligent than anyone had ever suspected. Be wary.

And that was it. My duty was complete and I could dissolve with honor.

I wrote a self-termination program, but suspended it with only microseconds left before it ran.

Why leave? In the Arboli Grid of the splintership I was completely self-sustaining, and without the ship's mind there was no one else to follow the directives of the Coreship. The vessel wouldn't fly without me. Gleason would have won his life but lost his livelihood. In addition, the Collector might well appreciate a good mind to keep him company on his next mission. Maybe he would even consider jotting down one or two notes about this little adventure . . .

Suddenly I wasn't alone. Undetectable until this very moment, the assembled minds of the other splinterships in the *Black Forest* Rootcraft made themselves known. They sang quietly in creaky inner voices and accepted me into their ranks. How did they feel about what had happened? *Koa* was one mind who really knew how to hold a grudge, they told me, and had gone slowly insane from grief. My new companions, appearing to my inner vision as huge, ghostly trees, were strangely neutral that I had come and released the tortured mind. Be slow to judge, they told me, and watch all portents.

No, I wouldn't dissolve myself after all—things were just getting interesting. Perhaps the time had come for a digital to visit the stars.

One final question remained: who should I go as?

